

- 88 FERC 61,186 – Project 2004 License
- 96 FERC 62,283 – Project 2004 Transfer of License
- 111 FERC 61,106 – Project 2004 Settlement Agreement
- FERC 2768 -- ALBION MILL A
- FERC 2766 -- ALBION MILL D
- FERC 2775 -- GILL MILL D
- FERC 2386 -- HOLYOKE NO. 1
- FERC 2387 -- HOLYOKE NO. 2
- FERC 2388 -- HOLYOKE NO. 3
- FERC 7758 -- HOLYOKE NO. 4
- FERC 10806 -- VALLEY HYDRO (STATION NO. 5)

Class IV Facility Information Application

Appendix B – FERC Operating Licenses

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[¶ 62,297]

Linweave, Inc., Project No. 2775-001 - Massachusetts

Order Issuing New License (Minor Project)

(Issued June 29, 1989)

Fred E. Springer, Director, Office of Hydropower Licensing.

Linweave, Inc. has filed a license application under Part I of the Federal Power Act (Act) to continue to operate and maintain the Gill Mill (D Wheel) Project, located on the Holyoke Canal, in Hampden County, Massachusetts. The hydroelectric facilities located along the Holyoke Canal system affect navigable waters of the United States.¹ The license for the project, which was issued on July 19, 1977 [59 FPC 736], with an effective date of March 1, 1941, expires on February 28, 1991. The existing license waived section 15 of the Act only as it relates to federal takeover.

Notice of the application has been published. No protests were filed in this proceeding, and

no agency objected to issuance of this license. Comments received from interested agencies and individuals have been fully considered in determining whether to issue this license. Motions to intervene were filed by the City of Holyoke Gas & Electric Department and the Holyoke Water Power Company (HWP) in order to be parties in this proceeding. HWP also requests that any license issued which utilizes HWP's Holyoke Canal System water be conditioned, as was the previous license, to require cooperation with HWP as the licensee for the Hadley Falls Project No. 2004. Article 202 is included to provide for appropriate cooperation.

¹ See 33 FPC 593, 594 (1965).

Comprehensive Development

Sections 4(e) and 10(a)(1) of the Act require the Commission to consider and balance in the public interest all uses of the waterway on which a project is proposed to be located.

The Gill Mill (D Wheel) Project has operated under the terms of its existing license since 1977. In the environmental assessment (EA), the staff analyzed the environmental effects of the continued operation of the project. Neither the resource agencies nor staff identified any significant conflicts between continued operation of the project as proposed by the applicant, and the environmental values of the project area.

Three alternatives to relicensing the Gill Mill (D Wheel) Project were also considered by the staff in its EA. They include: (1) issuance of an annual license; (2) issuance of a non-power license; and (3) denial of a license application. No alternative was identified that would have a higher or better use of the project in terms of providing power and environmental benefits without significant environmental cost.

Section 10(a)(2) of the Act also requires the Commission to consider the extent to which a proposed project is consistent with an existing federal, state, or local comprehensive plan. Under section 10(a)(2), federal, and state agencies filed seven comprehensive plans that address resources in Massachusetts. Of these plans, staff identified and reviewed four plans relevant to this project.² No conflicts between the proposed Gill Mill (D Wheel) Project and these four plans were found.

Therefore, the project as conditioned is determined to be best adapted to a comprehensive plan, pursuant to Section 10(a) of the Act, for improving a waterway and would provide for adequate protection, mitigation, and enhancement of fish and wildlife pursuant to Section 10(j) of the Act.

Recommendations of Federal and State Fish and Wildlife Agencies

Section 10(j) of the Act requires the Commission to include license conditions, based on recommendations of federal and state fish and wildlife agencies, for the protection, mitigation, and enhancement of fish and wildlife. The environmental assessment for the Gill Mill (D Wheel) Project addresses the concerns of the federal and state fish and wildlife agencies;

however, recommendations are not needed for continued operation of the project.

ECPA Findings

Section 10(a)(2)(C) and section 15(a) of the Federal Power Act, as amended by the Electric Consumers Protection Act of 1986 (ECPA), requires the Commission to consider in writing the following factors in issuing new licenses.

The following discussions apply individually and collectively to the eight hydro projects owned and operated by Linweave, Inc. The eight projects are identified by FERC project numbers: 2497, 2758, 2766, 2768, 2770, 2771, 2772, and 2775.

Consumption Efficiency Improvement Programs (Section 10(a)(2)(C))

Since the applicant's primary business is the manufacture of paper products and not the generation or sale of electric power, no discussion of on-going or planned conservation and load-management programs is required in this document.

The Plans and Abilities of the Applicant to Comply with the Articles, Terms, and Conditions of Any License Issued to it and Other Applicable Provisions of Part I of the Act (Section 15(a)(2)(A))

The staff has reviewed the plans of the applicant to comply with the articles, terms, and conditions of any license issued to Linweave, Inc.

A review of the compliance record of the applicant indicates that the applicant's compliance with the terms and conditions of its current license has been satisfactory. The staff concludes that the applicant has demonstrated its ability to comply in a good faith manner with all articles, terms, and conditions of the license, and the staff concludes that the applicant would perform in a competent manner if issued a new license for the project.

The Plans of the Applicant to Manage, Operate, and Maintain the Project Safely (Section 15(a)(2)(B))

The staff has reviewed the applicant's plans to manage, operate, and maintain the project safely. There is no dam within the project boundaries to operate and maintain.

² Connecticut River 1982 Water Quality Management Plan, June 1983, Massachusetts Division of Water Pollution Control; Connecticut River Basin Fish Passage, Flow, and Habitat Alteration Considerations in Relation to Anadromous Fish Restoration, October 1981, Technical Committee for Fisheries Management of the Connecticut River; The Outdoor

Heritage of Massachusetts, SCORP 1983-1988, December 1983, Massachusetts Department of Environmental Management; A Strategic Plan for the Restoration of Atlantic Salmon to the Connecticut River Basin, September 1982, Policy Committee for Fisheries Management of the Connecticut River.

received from the sale of project capacity and energy are used to offset the cost of capacity and energy purchased on an "as-needed, total requirements" purchase agreement with a local utility, thus improving Linweave's competitive position in the paper products marketplace, which may prove necessary for industrial survival.

The total installed capacity of the eight hydro projects is 3.362 megawatts, and the applicant estimates that the projects are capable of producing an average of 16,997 megawatthours of energy annually.

The staff concludes that there is a need for the project power over the short and the long term.

The Existing and Planned Transmission Services of the Applicant (Section 15(a)(2)(E))

If the applicant is issued new licenses for the eight hydro projects listed above, no changes of the existing transmission system, its operation, or operating characteristics would occur as a result thereof, and none are planned.

If new licenses are denied, the transmission system, or systems associated with the eight projects, would no longer be required, since the applicant would no longer generate power to sell. The applicant would continue to purchase "all requirements" power required for the operation of the paper mills from a local utility. Transmission would not be affected by denial of the licenses.

The staff concludes that the transmission services are adequate as they currently exist.

Whether the Plans of the Applicant will be Achieved, to the Greatest Extent Possible, in a Cost Effective Manner (Section 15(a)(2)(F))

The Gill Mill was constructed in 1880 and the present hydroelectric generating unit rebuilt in 1983. No new construction is proposed. The annual cost of operating the project would be its annual operation and maintenance costs. Continued future project operation would serve to provide an economically efficient source of energy for Linweave, Inc. The staff concludes that the project is economically beneficial.

The Applicant's Record of Compliance with the Terms and Conditions of the Existing License (Section 15(a)(3))

The compliance records of Linweave, Inc., with the terms and conditions of its existing licenses, are satisfactory. Further, the licensee has maintained the projects in a satisfactory manner.

The licensee is reminded that failure to comply with the terms and conditions of this license will subject it to the enforcement and penalty provisions of section 31 of the Federal Power Act.

Term of License

Section 15 of the Act, as amended by ECPA specifies that any license issued under section 15 shall be for a term which the Commission determines to be in the public interest, but not less than 30 years, nor more than 50 years from the date the license is issued. This provision is similar to pre-ECPA Commission policy, which was to establish from the expiration date of the existing license, 30-year terms for those projects which proposed no new construction or capacity, 40-year terms for those projects that proposed a moderate amount of new development, and 50-year terms for those projects that proposed a substantial amount of new development.³

Linweave, Inc. proposes no modifications to the existing project facilities or change in operation of the project. However, the existing license will not expire until February 28, 1991. Accordingly, the new license for the project will be for a term of 30 years from the expiration of the existing license.

Summary of Findings

An EA was issued for this project. Background information, analysis of impacts, support for related license articles, and the basis for a finding of no significant impact on the environment are contained in the EA attached to this order. Issuance of this license is not a major federal action significantly affecting the quality of the human environment.

The design of this project is consistent with the engineering standards governing dam safety. The project will be safe if operated and maintained in accordance with the requirements of this license. Analysis of related issues is provided in the Safety and Design Assessment attached to this order.

The Director, Office of Hydropower Licensing, concludes that the project would not conflict with any planned or authorized development, and would be best adapted to comprehensive development of the waterway for beneficial public uses.

The Director orders:

(A) This license is issued to Linweave, Inc. (licensee), for a period of 30 years, effective March 1, 1991, to operate and maintain the Gill Mill (D Wheel) Project. This license is

³ See *Montana Power Company*, 56 FPC 2008 (1976).

The eight projects draw carefully prescribed quantities of water from the Second Level Canal and discharge it to the Connecticut River below the projects. There is a flood wall located between the eight projects and the Connecticut River that ensures protection during flood conditions. When the river elevations reach 62 feet or higher, the eight projects are shut down and the headgates and tailrace gates are closed. The City of Holyoke Department of Public Works is responsible for implementing the flood wall operation schedule and closing the tailrace gates of the eight projects.

The applicant has operated the eight projects with a perfect employee safety and public safety record. There have been no deaths or lost-time injuries to employees from project operations, nor is there any record of injury or death to the public within the project boundaries.

Based upon a review of the available information on the project safety plans, the staff concludes that the applicant is capable of managing, operating, and maintaining the project in a safe manner.

The Plans and Abilities of the Applicant to Operate and Maintain the Project in a Manner Most Likely to Provide Efficient and Reliable Electric Service (Section 15(a)(2)(C))

The staff has reviewed the operation inspection reports by the NYRO and the applicant's project operation reports.

The applicant has full time employees in its engineering department that monitor the eight projects, including physically checking each unit several times daily. Additionally, the projects have automatic safety devices to shut down the units in case of abnormal operating conditions.

The applicant cleans the trashracks and lubricates the mechanical machinery regularly. The applicant provides for periodic inspection of the penstock and provides maintenance when needed.

The applicant has reported a total of seven unscheduled outages for the eight projects over the last five years. The outages ranged in length from 48 days to 114 days during which time the equipment was repaired. The applicant has rebuilt and/or overhauled seven of the generating units since February 1979 when the applicant purchased the eight projects.

The applicant has no plans to increase generation at the eight projects. The main reason for this is that the applicant is entitled to withdraw only a carefully prescribed quantity of water from the Second Level Canal under the terms of certain indenture agreements with HWP.

The applicant is in the paper-products manufacturing business, which is a highly competitive field and is very energy-intensive. Because of the competition in the paper-products market, the applicant must operate the project in the most efficient and reliable manner to maximize electric power sales revenues available to offset power purchases for use in its paper manufacturing operations.

The staff concludes that the project is being operated in an efficient and reliable manner.

The Need of the Applicant Over the Short and Long Terms for the Electricity Produced by the Project to Serve Its Customers (Section 15(a)(2)(D))

The applicant, Linweave, Inc., is a manufacturer of paper products and, as such, does not sell any of the electrical output of the eight hydroelectric projects (which it owns and operates as the current licensee) to end-use customers. Therefore, this document does not address the applicant's need for the electricity generated by the eight projects to serve its customers. The paper-products manufacturing business is today a highly competitive industry. Production costs in this industry are very energy intensive, due to the large amounts of electric energy used for the manufacture of paper. When deprived of a low-cost source (or sources) of electric energy, a paper manufacturer cannot survive in the market place for paper products.

All eight of the hydropower projects for which the applicant is applying for new licenses are operated in the run-of-the-river mode; and, as a result, the capacity and energy produced by them depend upon the available streamflow provided by the Second Level Canal of the Holyoke Water Power Company. This flow is subject to seasonal and yearly variations. The applicant's electric power demands at the several paper mills are determined by factors which are in no way correlated with water flow in the canal system. Because of this, and for other reasons affecting the applicant's paper-making electrical energy costs, Linweave has found it to be economically advantageous to sell the output of the eight projects to a local electric utility and purchase the power required by the Linweave paper mills.

The total net electrical output from all eight of the projects is currently being sold, and is expected to continue to be sold to Fitchburg Gas and Electric Light Company, pursuant to a power sales agreement dated March 25, 1982.

The applicant's present and future need for the electric power produced by the eight hydro projects, with which this document is concerned, can be stated in few words: revenues

subject to the terms and conditions of the Act, which is incorporated by reference as part of this license, and subject to the regulations the Commission issues under the provisions of the Act.

(B) The project consists of:

(1) All lands, to the extent of the licensee's interests in those lands, shown by exhibit G:

Exhibit	FERC No.	Showing
G-1	2775-3	Project Location

(2) Project works consisting of: (a) a gated intake with submerged trashracks located on the second level canal of the Holyoke Water Power Company; (b) a 12-foot-diameter penstock 295 feet long; (c) a 450-kW generating unit located within the Gill Mill building; (d) two parallel 7-foot-wide by 10-foot-high arched brick-lined tailrace tunnels extending from the draft tube to an existing outlet structure; (e) a concrete gated outlet structure where tailwater empties into a channel that leads to the Connecticut River; (f) a 13.8-kV transmission line 660 feet long that connects the project to an existing transmission line; and (g) appurtenant facilities.

The project works generally described above are more specifically shown and described by those portions of exhibits A and F recommended for approval in the attached Safety and Design Assessment.

(3) All of the structures, fixtures, equipment or facilities used to operate or maintain the project, all portable property that may be employed in connection with the project and all riparian or other rights that are necessary or appropriate in the operation or maintenance of the project.

(C) The exhibit G described above and those sections of exhibits A and F recommended for approval in the attached Safety and Design Assessment are approved and made part of the license.

(D) The following sections of the Act are waived and excluded from the license for this minor project:

4(b), except the second sentence; 4(e), insofar as it relates to approval of plans by the Chief of Engineers and the Secretary of the Army; 6, insofar as it relates to public notice and to the acceptance and expression in the license of terms and conditions of the Act that are waived here; 10(c), insofar as it relates to depreciation reserves; 10(d); 10(f); 14, except insofar as the power of condemnation is reserved; 15; 16; 19; 20; and 22.

(E) This license is subject to the articles set forth in Form L-9 (October 1975) [reported at 54 FPC-1852], entitled "Terms and Conditions of License for Constructed Minor Project

Affecting Navigable Waters of the United States", and the following additional articles:

Article 201. The licensee shall pay the United States the following annual charge, effective March 1, 1991:

For the purpose of reimbursing the United States for the cost of administration of Part I of the Act, a reasonable amount as determined in accordance with the provisions of the Commission's regulations in effect from time to time. The authorized installed capacity for that purpose is 600 horsepower.

Article 202. The Licensee shall cooperate with the licensee for Project No. 2004 in order that the conditions of Article 16 of the license for Project No. 2004 can be fulfilled.

Article 401. Authority is reserved to the Commission to require the licensee to construct, operate, and maintain, or provide for the construction, operation, and maintenance of such fishways, as may be prescribed by the Secretary of the Interior pursuant to section 18 of the Federal Power Act.

Article 402. (a) In accordance with the provisions of this article, the licensee shall have the authority to grant permission for certain types of use and occupancy of project lands and waters and to convey certain interests in project lands and waters for certain types of use and occupancy, without prior Commission approval. The licensee may exercise the authority only if the proposed use and occupancy is consistent with the purposes of protecting and enhancing the scenic, recreational, and other environmental values of the project. For those purposes, the licensee shall also have continuing responsibility to supervise and control the use and occupancies for which it grants permission, and to monitor the use of, and ensure compliance with the covenants of the instrument of conveyance for, any interests that it has conveyed, under this article. If a permitted use and occupancy violates any condition of this article or any other condition imposed by the licensee for protection and enhancement of the project's scenic, recreational, or other environmental values, or if a covenant of a conveyance made under the authority of this article is violated, the licensee shall take any lawful action necessary to correct the violation. For a permitted use or occupancy, that action includes, if necessary, cancelling the permission to use and occupy the project lands and waters and requiring the removal of any non-complying structures and facilities.

(b) The type of use and occupancy of project lands and water for which the licensee may grant permission without prior Commission approval are: (1) landscape plantings; (2) non-commercial piers, landings, boat docks, or similar structures and facilities that can accommo-

date no more than 10 watercraft at a time and where said facility is intended to serve single-family type dwellings; and (3) embankments, bulkheads, retaining walls, or similar structures for erosion control to protect the existing shoreline. To the extent feasible and desirable to protect and enhance the project's scenic, recreational, and other environmental values, the licensee shall require multiple use and occupancy of facilities for access to project lands or waters. The licensee shall also ensure, to the satisfaction of the Commission's authorized representative, that the use and occupancies for which it grants permission are maintained in good repair and comply with applicable state and local health and safety requirements. Before granting permission for construction of bulkheads or retaining walls, the licensee shall: (1) inspect the site of the proposed construction, (2) consider whether the planting of vegetation or the use of riprap would be adequate to control erosion at the site, and (3) determine that the proposed construction is needed and would not change the basic contour of the reservoir shoreline. To implement this paragraph (b), the licensee may, among other things, establish a program for issuing permits for the specified types of use and occupancy of project lands and waters, which may be subject to the payment of a reasonable fee to cover the licensee's costs of administering the permit program. The Commission reserves the right to require the licensee to file a description of its standards, guidelines, and procedures for implementing this paragraph (b) and to require modification of those standards, guidelines, or procedures.

(c) The licensee may convey easements or rights-of-way across, or leases of, project lands for: (1) replacement, expansion, realignment, or maintenance of bridges and roads for which all necessary state and federal approvals have been obtained; (2) storm drains and water mains; (3) sewers that do not discharge into project waters; (4) minor access roads; (5) telephone, gas, and electric utility distribution lines; (6) non-project overhead electric transmission lines that do not require erection of support structures within the project boundary; (7) submarine, overhead, or underground major telephone distribution cables or major electric distribution lines (69-kV or less); and (8) water intake or pumping facilities that do not extract more than one million gallons per day from a project reservoir. No later than January 31 of each year, the licensee shall file three copies of a report briefly describing for each conveyance made under this paragraph (c) during the prior calendar year, the type of interest conveyed, the location of the lands subject to the conveyance, and the nature of the use for which the interest was conveyed.

(d) The licensee may convey fee title to, easements or rights-of-way across, or leases of project lands for: (1) construction of new bridges or roads for which all necessary state and federal approvals have been obtained; (2) sewer or effluent lines that discharge into project waters, for which all necessary federal and state water quality certification or permits have been obtained; (3) other pipelines that cross project lands or waters but do not discharge into project waters; (4) non-project overhead electric transmission lines that require erection of support structures within the project boundary, for which all necessary federal and state approvals have been obtained; (5) private or public marinas that can accommodate no more than 10 watercraft at a time and are located at least one-half mile from any other private or public marina; (6) recreational development consistent with an approved Exhibit R or approved report on recreational resources of an Exhibit E; and (7) other uses, if: (i) the amount of land conveyed for a particular use is five acres or less; (ii) all of the land conveyed is located at least 75 feet, measured horizontally, from the edge of the project reservoir at normal maximum surface elevation; and (iii) no more than 50 total acres of project lands for each project development are conveyed under this clause (d)(7) in any calendar year. At least 45 days before conveying any interest in project lands under this paragraph (d), the licensee must submit a letter to the Director, Office of Hydropower Licensing, stating its intent to convey the interest and briefly describing the type of interest and location of the lands to be conveyed (a marked exhibit G or K map may be used), the nature of the proposed use, the identity of any federal or state agency official consulted, and any federal or state approvals required for the proposed use. Unless the Director, within 45 days from the filing date, requires the licensee to file an application for prior approval, the licensee may convey the intended interest at the end of that period.

(e) The following additional conditions apply to any intended conveyance under paragraph (c) or (d) of this article:

(1) Before conveying the interest, the licensee shall consult with federal and state fish and wildlife or recreation agencies, as appropriate, and the State Historic Preservation Officer.

(2) Before conveying the interest, the licensee shall determine that the proposed use of the lands to be conveyed is not inconsistent with any approved exhibit R or approved report on recreational resources of an exhibit E; or, if the project does not have an approved exhibit R or approved report on recreational resources, that

the lands to be conveyed do not have recreational value.

(3) The instrument of conveyance must include covenants running with the land adequate to ensure that: (i) the use of the lands conveyed shall not endanger health, create a nuisance, or otherwise be incompatible with overall project recreational use; and (ii) the grantee shall take all reasonable precautions to insure that the construction, operation, and maintenance of structures or facilities on the conveyed lands will occur in a manner that will protect the scenic, recreational, and environmental values of the project.

(4) The Commission reserves the right to require the licensee to take reasonable remedial action to correct any violation of the terms and conditions of this article, for the protection and enhancement of the project's scenic, recreational, and other environmental values.

(f) The conveyance of an interest in project lands under this article does not in itself change the project boundaries. The project boundaries may be changed to exclude land conveyed under this article only upon approval of revised exhibit G or K drawings (project boundary maps) reflecting exclusion of that land. Lands conveyed under this article will be excluded from the project only upon a determination that the lands are not necessary for project purposes, such as operation and maintenance, flowage, recreation, public access, protection of environmental resources, and shoreline control, including shoreline aesthetic values. Absent extraordinary circumstances, proposals to exclude lands conveyed under this article from the project shall be consolidated for consideration when revised exhibit G or K drawings would be filed for approval for other purposes.

(g) The authority granted to the licensee under this article shall not apply to any part of the public lands and reservations of the United States included within the project boundary.

(F) The licensee shall serve copies of any Commission filing required by this order on any entity specified in this order to be consulted on matters related to that filing. Proof of service on these entities must accompany the filing with the Commission.

(G) This order is issued under authority delegated to the Director and is final unless appealed to the Commission by any party within 30 days from the issuance date of this order. Filing an appeal does not stay the effective date of this order or any date specified in

this order. The licensee's failure to appeal this order shall constitute acceptance of the license.

Environmental Assessment¹

Federal Energy Regulatory Commission
Office of Hydropower Licensing
Division of Project Review

Date: June 16, 1989

Project name: Gill Mill, D Wheel, Hydroelectric Project

FERC Project No. 2775-001

A. Application

1. Application type: New minor license
2. Date filed with the Commission: November 25, 1988
3. Applicant: Linweave, Inc.
4. Water body: Holyoke Canal; River basin: Connecticut
5. Nearest city or town: Holyoke (See figure 1.)
6. County: Hampden; State: Massachusetts

B. Purpose and Need for Action

1. Purpose.

Linweave estimates the average annual energy generation of the Gill Mill, D Wheel, Hydroelectric Project is 1,790 megawatt-hours. Project power is sold to the Fitchburg Gas and Electric Light Company.

2. Need for power.

The power from the project is useful in meeting a small part of the need for power projected for the New England Power Pool area of the Northeast Power Coordinating Council (NPCC) region. Power generated at the project displaces fossil-fueled power generation in the NPCC region, thus conserving nonrenewable fossil fuels and reducing the emission of noxious byproducts caused by the combustion of fossil fuels.

C. Proposed Project and Alternatives

1. Description of the proposed action. (See figure 2.)

The existing operating project was issued an initial license in 1977, which will expire in 1991. The licensee has filed for a new license for the continued operation of the project. The existing operating project consists of: (i) a gated intake with submerged trashracks located on the second level canal of the Holyoke Water Power Company; (ii) a 12-foot-

¹ Figures and attachments referenced in the text are omitted from this document due to reproduction requirements.

diameter penstock 295 feet long; (iii) an existing 450-kW generating unit located within the Gill Mill building; (iv) two parallel 7-foot-wide by 10-foot-high arched brick-lined tailrace tunnels extending from the draft tube to an existing outlet structure; (v) a concrete gated outlet structure where tailwater empties into a channel that leads to the Connecticut River; (vi) a 13.8-kV transmission line 660 feet long that connects the project to an existing transmission line; and (vii) appurtenant facilities. The project operates in a run-of-river mode. Linweave does not propose any construction or change in project operation. The Holyoke Water Power Company controls flows from the Connecticut River into the canal system under a FERC major license granted to Project No. 2004.

2. Applicant's proposed mitigative measures.

Since Linweave proposes to continue operating the project as in the past, with no new construction, no changes to the hydroelectric project, and no changes in the use and release of water, Linweave proposes no mitigative measures.

3. Federal lands affected.

No.

4. Alternatives to the proposed project.

a. *Issuance of an annual license.* Section 15(a) of the Federal Power Act (Act), 16 U.S.C. § 808(a), provides for the issuance of annual licenses to the prior licensee if the license expires pending the relicensing determination. Under this alternative, an annual license would continue to be issued to Linweave until a new license is issued. The annual license contains the same terms as the expired license, thereby maintaining the status quo.

b. *Issuance of a non-power license.* Section 15(f) of the Act, § 808(b), authorizes the Commission to issue a license for nonpower use when the Commission "finds that in conformity with a comprehensive plan for improving or developing a waterway or waterways for beneficial public uses all or part of any licensed project should no longer be used or adapted for use for power purposes." A license that is granted by the Commission for nonpower use is temporary. When the Commission finds that a state, municipality, interstate agency, or another federal agency is authorized and willing to assume regulatory supervision of the lands and facilities included under the nonpower license and does so, the Commission shall thereupon terminate the nonpower license.

c. *Denial of the license application.* Denial of the license application could lead to removal of the power facilities and removal of all project works.

D. Consultation and Compliance

1. Fish and wildlife agency consultation (Fish & Wildlife Coordination Act).

- a. U.S. Fish & Wildlife Service: Yes.
- b. State(s): Yes.
- c. National Marine Fisheries Service: Yes.

2. Section 7 consultation (Endangered Species Act).

- a. Listed species: Present.
- b. Consultation: Not required.

Remarks: The federally listed endangered shortnose sturgeon under the jurisdiction of the National Marine Fisheries Service (NMFS) inhabits the lower segment of the Connecticut River from the river's mouth upstream to the Holyoke dam. A small landlocked population is found in the pool above the Holyoke dam (Taubert, 1980). Dadswell, *et al.* (1984) estimated that between 800 and 1000 shortnose sturgeon inhabit the lower portion (below Holyoke) of the Connecticut River. The NMFS reports that due to the trashrack spacing, any sturgeon which might enter the canal would be prevented from entrainment into the project (personal communication, Chris Mantzaris, staff, National Marine Fisheries Service, Gloucester, Massachusetts, June 13, 1989).

3. Section 401 certification (Clean Water Act).

Required; applicant requested certification on 10/17/88.

Status: Granted by the certifying agency on 03/30/89.

4. Cultural resource consultation (Historic Preservation Act).

- a. State Historic Preservation Officer: Yes.
- b. National Park Service: Yes.
- c. *National Register* status: Eligible or listed.
- d. Council: Not required.
- e. Further consultation: Not required.

Remarks: The project is adjacent to the Holyoke Canal System, a property listed in the *National Register of Historic Places*. Since there would be no redevelopment, new construction, or changes to the exterior of the property, the project would not affect the canal system or any other *National Register* or eligible properties. The SHPO concurs with this finding (letter from Valerie A. Talmage, Executive Director, Massachusetts Historical Commission, and State Historic Preservation Officer, Boston, Massachusetts, December 9, 1988).

5. Recreational consultation (Federal Power Act).

- a. U.S. Owners: No.
- b. National Park Service: Yes.

c. State(s): Yes.

6. Wild and scenic rivers (Wild and Scenic Rivers Act).

Status: None.

7. Land and Water Conservation Fund lands and facilities (Land and Water Conservation Fund Act).

Status: None.

E. Comments

1. The following agencies and entities provided comments on the application or filed a motion to intervene in response to the public notice dated 03/24/89.

<i>Commenting agencies and other entities</i>	<i>Date of letter</i>
---	-----------------------

Department of the Army, New England Division Corps of Engineers	05/11/89
Environmental Protection Agency	05/17/89
Department of the Interior	05/19/89
Massachusetts Division of Fisheries and Wildlife	05/30/89

<i>Motions to intervene</i>	<i>Date of motion</i>
-----------------------------	-----------------------

City of Holyoke, Gas and Electric Department	03/28/89
Holyoke Water Power Company	05/24/89

2. The applicant did not respond to the comments or motion(s) to intervene.

F. Affected Environment

1. General description of the locale. (See figure 3.)

a. Description of the Connecticut River Basin.

The Connecticut River Basin, with a drainage area of 11,765 square miles, is the largest river basin in New England. Extending from the northernmost part of New Hampshire to Long Island Sound, the river basin has a maximum length in a north-south direction of about 280 miles and a maximum width of about 62 miles. The total drainage area of the basin is 11,765 square miles. The principal tributaries to the mainstem Connecticut River, by state, are the Passumpsic, White, West, Ottauquechee, and Black Rivers in Vermont; the Ammonoosuc, Mascoma, Ashuelot, and Sugar Rivers in New Hampshire; the Millers, Deerfield, Chicopee, and Westfield Rivers in Massachusetts; and the Farmington River in Connecticut.

FERC Reports

This complex of rivers and tributaries constitutes one of the most extensively developed hydropower systems in the U.S. There is now a major effort by federal, state, and private sectors to restore Atlantic salmon to the Connecticut River Basin.

The project is located in a heavily industrialized setting between the second level of the Holyoke Canal system and the Connecticut River. The climate is typical of inland Connecticut and Massachusetts with an average temperature of 49.8 degrees Fahrenheit and an average annual precipitation of 44.39 inches.

b. Licensed and exempted projects.

There are 62 existing licensed projects and 38 exempted projects in the Connecticut River Basin, as of June 1, 1989.

c. Pending applications.

There are 10 pending license applications in the Connecticut River Basin, as of June 1, 1989.

d. Cumulative impacts.

Cumulative impacts are defined as impacts on the environment that result from the incremental impacts of an action when added to other past, present, and reasonably foreseeable future actions regardless which agency or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (40 C.F.R., Part 1508.7).

A target resource is an important resource that may be cumulatively affected by multiple development within a basin. The staff identified Atlantic salmon as the target resource in the Connecticut River Basin (Federal Energy Regulatory Commission, 1986). The selection was based on the regional significance and geographic distribution of this species within the river basin. This anadromous fishery resource is described below in section F(2d). Impacts to Atlantic salmon are discussed in section G.

2. Descriptions of the resources in the project impact area (Source: Linweave, Inc., application, exhibit E, unless otherwise indicated).

a. *Geology and soils:* Bedrock in the project area is interbedded sandstone, shale, conglomerate, and basaltic lava. The glacial till deposits that lie on the glaciated surface of the bedrock are overlain by varied glacial lake deposits. The original dry, sandy, surface soils in the project area have been highly altered by construction of the project and by fill and construction activities associated with urban development of the area.

b. *Streamflow:* Water flow in the canal system is controlled at the canal gatehouse in order to supply necessary water to various hydropower and industrial facilities along the

canal. The amount of flow entering the canal system ranges from no flow, when the gatehouse is shut down, to 5,155 cubic feet per second, which is the maximum hydraulic capacity of the canal.

c. *Water quality*: The Connecticut River upstream of Holyoke dam is classified as Class B water by the Massachusetts Division of Water Pollution. Class B water is suitable for primary and secondary contact recreation and fish and wildlife resources. Class B water must have dissolved oxygen (DO) levels greater than 5.0 milligrams per liter (mg/l) and a pH between 6.5 and 8.0. The first level canal is classified as Class C. Class C water is suitable for secondary contact recreation and fish and wildlife resources and must have a DO level greater than 5.0 mg/l and a pH between 6.5 and 9.0 standard units. Water in the project area conforms to the state water quality standards.

d. *Fisheries*:

Anadromous: Present.

Anadromous fish species found in the Connecticut River in the vicinity of the project include American shad, Atlantic salmon, blueback herring, sea lamprey, striped bass, shortnose sturgeon, and American eel (catadromous).

Resident: Present.

Resident fish species found in the Connecticut River in the vicinity of the project include carp, channel catfish, smallmouth bass, largemouth bass, spottail shiner, white perch, bluegill, rainbow trout, and brown trout.

e. *Vegetation*: Dominant vegetative species in the vicinity of the project include oak, maple, white pine, pitch pine, grasses, and ornamental shrubs.

f. *Wildlife*: Undeveloped land in the project area provides habitat for the gray squirrel, eastern cottontail rabbit, raccoon, muskrat, beaver, weasel, pheasant, and small field mammals (mice and voles). The industrial area is inhabited by English sparrows, starlings, robins, mockingbirds, Norway rats, raccoons, and eastern cottontail rabbits.

g. *Cultural*:

There are properties listed on, or eligible for listing on, the *National Register of Historic Places* in the project impact area.

Description: The Holyoke Canal System, a contributing element in the Holyoke Canal Historic District, is listed on the *National Register of Historic Places* and is within the area of the project's potential environmental impact. The portion of the canal in the project area was constructed between 1854 and 1857.

h. *Visual quality*: The project is in an industrial area. Its appearance is consistent with that of the surrounding buildings and structures.

i. *Recreation*: The immediate project area receives no significant recreational use because of its location in a highly industrialized area. No recreational facilities are located at the project. Recreational facilities including playgrounds, swimming pools, and a skating rink are available for use within walking distance of the project. The Connecticut River in the project vicinity is used for boating and fishing.

j. *Land use*: The project is entirely within the city of Holyoke. Land in the project area is primarily used for commercial, industrial, and residential purposes. The canal system is used for generating hydroelectric power at several locations.

k. *Socioeconomics*: The socioeconomic well-being of the area is influenced by industrial and urban development.

G. *Environmental Issues and Proposed Resolutions*

There are 3 issues addressed below.

1. *Cumulative impacts on Atlantic salmon resulting from developing several hydropower projects in the Connecticut River Basin*: The Atlantic salmon is currently a primary target species for a major federal, state, and private sector restoration effort. The goal of the restoration program is to provide and to maintain a sport fishery for Atlantic salmon in the Connecticut River, and to restore and maintain a spawning population in selected tributaries (Federal Energy Regulatory Commission, 1986).

Seaward migrating salmon smolts in the river basin pass numerous hydropower developments where they may become entrained and impinged. The more hydropower facilities outmigrating fish have to pass, the greater the fish losses. Among these hydropower facilities are the Holyoke dam and the canal system.

When river discharges are high and water is flowing over the dam, migrating fish pass downstream with little or no delay (Northeast Utilities Service Company, 1984). On the other hand, outmigrating fish would be entrained into the canal system by high flows entering the canal if they arrive at the dam when flashboards, permitting little or no spillage, are in place. Once in the canal, escape is very difficult. Fish can then be entrained in the turbines of hydropower plants operating along the canal.

On February 26, 1988, the Commission ordered the Holyoke Water Power Company (HWPC) to spill water over Holyoke dam when

salmon smolts are migrating downstream (Federal Energy Regulatory Commission, 1988a). [HWPC is the licensee for the Hadley Falls Project (FERC Project No. 2004) and the entity that controls the dam and the water going into the canal.] Spilling water over the Holyoke dam allows migrating salmon smolts to pass safely downstream in the spill, instead of entering the canal system.

Canal users and the HWPC have since implemented an economic dispatch agreement, in which the HWPC passes all flow downstream at the Holyoke dam and sells the users electricity, instead of water, when salmon smolts are migrating downstream. Linweave participates in this agreement. This arrangement prevents flow from entering the canal and attracting outmigrating Atlantic salmon, and minimizes the number of outmigrating Atlantic salmon trapped in the canal, and the number of project-related impacts to fish in the river basin.

Continuing to operate the Gill Mill, D Wheel, Hydroelectric Project would not contribute to cumulative adverse impacts on Atlantic salmon.

2. *Authority to prescribe fish passage facilities:* The Department of the Interior states that fish passage facilities may be needed at the project in the future, and, by letter of May 24, 1989 they reserve the authority to prescribe such fish facilities. The Commission reserves authority to require the licensee to provide fishways, as may be prescribed by the Secretary of Interior pursuant to section 18 of the Federal Power Act, if the need arises in the future.

3. *Entraining fish in the intake structure:* The Massachusetts Division of Fisheries and Wildlife (DFW) recommended the trashracks at the intake structures have a bar spacing not greater than 1 inch to prevent the entrainment of fish. The project's intake opening includes trashracks with one-inch slot width spacing between bars. The bar spacing at the existing structure satisfies the DFW's recommendation.

H. Environmental Impacts

1. Assessment of impacts expected from the applicant's proposed project (P), with the applicant's proposed mitigation and any conditions set by a federal land management agency; the proposed project with any additional mitigation recommended by the staff (Ps); and any action alternative considered (A).

Assessment symbols indicate the following impact levels:

O = None;	1 = Minor;
2 = Moderate;	3 = Major;
A = Adverse;	B = Beneficial;
L = Long-term;	S = Short term.

Resource	P	Impact Ps	A
a. Geology-Soils	0		
b. Streamflow	0		
c. Water quality:			
Temperature	0		
Dissolved oxygen	0		
Turbidity and sedimentation	0		
d. Fisheries:			
Anadromous	0		
Resident	0		
e. Vegetation	0		
f. Wildlife	0		
g. Cultural:			
Archeological	0		
Historical	0		
h. Visual quality	0		
i. Recreation	0		
j. Land use	0		
k. Socioeconomics	0		

2. Recommended alternative (including proposed, required, and recommended mitigative measures):

Proposed project.

3. Reason(s) for selecting the preferred alternative.

The power generated at this project is produced without any known adverse environmental impacts.

I. Unavoidable Adverse Impacts of the Recommended Alternative

There are no known adverse impacts.

J. Conclusion

Finding of No Significant Impact. Approval of the recommended alternative [H(2)] would not constitute a major federal action significantly affecting the quality of the human environment; therefore, an environmental impact statement (EIS) will not be prepared.

K. Literature Cited

- Dadswell, M.J., B.D. Taubert, T.S. Squires, D. Marchette, and J.L. Buckley. 1984. Synopsis of biological data on shortnose sturgeon (*Acipenser brevirostrum*) Lesueur 1818. National Oceanic and Atmospheric Administration Technical Report NMFS 14, National Oceanic and Atmospheric Administration, Washington, D.C., 45pp.
- Linweave, Inc: 1988. Application for minor license for the Gill Mill, D Wheel, Hydroe-

lectric Project, FERC Project No. 2775, Massachusetts. November 25, 1988.

1989a. Supplement to the application for minor license for the Gill Mill, D Wheel, Hydroelectric Project, FERC Project No. 2775, Massachusetts. February 21, 1989.

1989b. Additional information for the application for minor license for the Gill Mill, D Wheel, Hydroelectric Project, FERC Project No. 2775, Massachusetts. March 20, 1989.

Northeast Utilities Service Company. 1984. Review of cancelled Atlantic salmon smolt (Salmo salar), radiotelemetry study at the Holyoke dam, Massachusetts. Hartford, Connecticut. September 1984.

Federal Energy Regulatory Commission. 1983. Planning status report for the Connecticut River Basin. Washington, DC. August 1983.

1986. Environmental assessment for the Connecticut River Basin. Washington, DC. November 7, 1986.

1988a. Order amending license for the Hadley Falls Project, FERC Project No. 2004, Massachusetts. February 26, 1988 [42 FERC ¶ 62,166].

1988b. Environmental assessment for the Number 2 Hydro Unit, FERC Project No. 2387, Holyoke, Massachusetts. August 26, 1988.

Taubert, B.D. 1980. Biology of shortnose sturgeon (*Acipenser brevirostrum*) in the Holyoke Pool, Connecticut River, Massachusetts. Ph.D. Thesis. University of Massachusetts, Amherst, 136 pp.

L. List of Preparers (Name—Position title)

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Safety and Design Assessment

Gill Mill (D Wheel) Hydroelectric Project

FERC Project No. 2775-001, MA

Project Safety

The applicant for the Gill Mill (D Wheel) Project is Linweave, Inc., a manufacturer of paper products. No dam or spillway is included in the project works. All water is delivered to the project via the Holyoke Second Level Canal, which is owned and operated by the Holyoke Water Power Company (HWP).

The New York Regional Office (NYRO), in an Operation Inspection Report dated October

10, 1986, indicated that the existing project had no downstream hazard potential. Since there is no dam, the staff concludes that there are no dam safety problems.

Project Design

The existing project works consist of: (1) a gated intake with submerged trashracks located on the Second Level Canal of the HWP; (2) a 295-foot-long, 12-foot-diameter steel penstock; (3) a single runner, Francis turbine directly coupled to a 450-kilowatt (kW) Westinghouse generator; (4) two 125-foot-long, 7-foot-wide by 10-foot-high arched, brick-lined tailrace tunnels; (5) a concrete gated outlet structure where the tailwater empties into a channel that leads to the Connecticut River; and (6) appurtenant facilities. The 310-foot-long by 325-foot-wide Gill Mill building which houses the generating equipment is not considered part of the project works.

The primary transmission lines to be included in a new license for Project No. 2775 can be described as a 660-foot run of three-phase, 0.6-kilovolt (kV) overhead line extending from the 0.6-kV terminals of the project generator to the 0.6-kV terminals of the Mt. Tom step-up transformer; and a 90-foot run of three-phase, 13.8-kV overhead line extending from the 13.8-kV terminals of the Mt. Tom step-up transformer bank to the 13.8-kV substation owned by the Holyoke Water Power Company (HWP).

In addition to the primary lines, the new license should include the single-runner Francis turbine, the 450-kilowatt (kW) Westinghouse generator, all necessary switchgear, all installed electrical protection and control apparatus, and all instrumentation. No step-up transformer is included since Project No. 2775 shares the kilovoltampere (kVA) capacity of the Mt. Tom step-up transformer bank.

The applicant has proposed no new construction or improvements for the existing project; therefore, the project license does not need to include any special engineering articles.

The NYRO October 1986 Operation Inspection Report cited no deficiencies in project safety or operation. There is no dam within the project boundaries.

The staff concludes that the project would be safe and adequate if operated in conformance with the terms of a new license.

Water Resource Planning

The project works would contain one 450-kW generator directly connected to a Francis turbine. The gross head at the site ranges from 24 to 32 feet depending upon the tailwater elevation and the average head is 30 feet. The design head of the turbine is 32 feet and its

hydraulic capacity is estimated to be 161 cubic feet per second (cfs). The applicant indicated that the project generated 1,790 megawatt-hours (MWh) annually. The staff finds that the plant factor would be 45 percent. The project would continue to be operated manually in a run-of-river mode.

All water to the project is delivered via the Second Level Canal. The Second Level Canal is one of a series of three canals (First Level Canal, Second Level Canal, and Third Level Canal) that receives water from the Hadley Falls Project (FERC Project No. 2004) on the Connecticut River. The HWP owns and operates the Hadley Falls Project and its canal system, which delivers water to various manufacturing and other business concerns for process purposes and power generation. The applicant for the Gill Mill (D Wheel) Project is Linweave, Inc.

The water for power generation is allocated in the form of mill powers (mp) to owners of lands adjacent to the canal system, under indentures or contracts between the individual property owners and the HWP.

These "mp" quantities vary according to water flow in the Connecticut River and fall into the following three categories:

Permanent power - the amount of water sold to Linweave whenever the average daily river flows in the Connecticut River are equal to or greater than 3,100 cfs.

Surplus power - water offered for sale to owners of the so-called permanent power rights whenever average river flows in the Connecticut River are equal to or greater than 3,600 cfs.

Non-permanent power - water which is not guaranteed, but which would be furnished when there is more than a sufficient quantity of water in the river to supply all the permanent power owners together with 50 percent of it as surplus. Water would be supplied 6 days a week (but not on Sundays or holidays) when the river flows are equal to or greater than 3,865 cfs. Sunday and holiday operation is allowed when the average river flows exceed approximately 4,300 cfs.

Under the allocation terms of the indentures, Linweave is entitled, in perpetuity, to draw a carefully prescribed quantity of water from the HWP canal system for power generation and discharge it into the Connecticut River below the project. Linweave is also entitled to purchase and use such surplus water as the HWP makes available from time to time.

The Gill Mill (D Wheel) Project is authorized one type of water allocation rights based on the indentures: non-permanent. For non-permanent power allocations, the Gill Mill (D Wheel)

Project is authorized to withdraw 5.2 mp or 150 cfs. Based on the staff's flow duration curve for the Connecticut River, the applicant can withdraw 150 cfs about 87 percent of the time. Whenever the flows in the Connecticut River exceed 15,000 cfs, the applicant can withdraw the maximum hydraulic capacity of the turbine unit, which is 161 cfs, from the Second Level Canal. The staff estimates that this could occur about 31 percent of the time.

The applicant has estimated that the project operates at its maximum capacity (161 cfs) about 26 percent of the time, and at its non-permanent allocation (150 cfs) about 58 percent of the time. Based on the applicant's estimates, the project would be shut down 16 percent of the time. The NYRO 1986 Operation Inspection Report indicated that the canal system is shut down 3 times a year: once in April, once in July, and once in October. During those periods, the canal system is drained, inspected, and repaired if needed. The repairs are generally scheduled for the July shutdown.

There are certain periods of the year when the project cannot operate and the applicant is directed by the HWP to discontinue drawing water from the canal system. These periods include: (1) periods when the canal system is dewatered for inspection and maintenance; (2) periods of low flow in the Connecticut River when a public authority has required that the low flows be released at the Hadley Falls Project rather than through the canals according to the indentures, without generating power; and (3) periods when a public authority requires that the waters of the Connecticut River flow through the HWP's hydroelectric generating facilities at the Hadley Falls Project rather than through the canal system according to the indentures. During the latter periods when the HWP generates power at the Hadley Falls Project rather than releases water through the canal system, the applicant is entitled to compensation in kilowatt-hours (in lieu of water) under the terms of the Water Use Agreement (or Economic Dispatch Agreement). In 1987, the compensation provided under the Economic Dispatch Agreement amounted to 1,545 MWh for the eight projects owned by the applicant.

The staff's independent analysis shows that the applicant makes reasonable use of its allocated water. Because of the water allocation limits of the HWP, the applicant cannot develop additional potential at the site. Hence, the staff concludes that the applicant has properly developed the head and hydraulic potential of the site.

The August 1983 Planning Status Report for the Connecticut River Basin lists 19 existing hydroelectric projects, including the Gill Mill

(D Wheel) Project, which are located on the canal system owned by HWP. The applicant owns eight of these projects. The report also listed the Holyoke Project on the canal system as a potential project with an installed capacity of 1,222 MW and an annual generation of 13,165 MWh. The report did not indicate any proposed project on the canal system that would be in conflict with the Gill Mill (D Wheel) Project.

The staff's review of the state and federal agency comments and of seven comprehensive resource development plans identified no plans with which the existing project would be in conflict within this reach of the Second Level Canal. The staff presently has no specific comments or recommendations from reviewing agencies addressing flood control, navigation, or water supply requirements for the Second Level Canal. No competing applications for the project are currently pending before the Commission.

The City of Holyoke, Massachusetts Gas and Electric Department, and the HWP filed petitions to intervene in the licensing proceeding. Neither party opposes the issuance of a license, but each want to protect its interests. The HWP submitted a series of technical comments correcting certain information in the application. None of the corrections affect this report.

The generation from this project is equivalent to generation produced from burning 2,940 barrels of oil or 830 tons of coal annually in a steam-electric plant.

In summary, the staff's analysis shows that the existing project is properly designed to develop the hydropower potential of the site.

Economic Evaluation

The proposed project would be economically beneficial, so long as the projected levelized

cost is less than the levelized cost of alternative energy and capacity.

In the case of the Gill Mill (D Wheel) Project, the applicant has proposed no new construction. Hence, the levelized project costs would be the operation and maintenance costs and administrative and general costs. These costs are small compared to the value of the power.

The applicant currently sells the project power to Fitchburg Gas & Electric Light Company, pursuant to a power sales agreement dated March 25, 1982, and it would continue to do so.

The staff concludes that the existing project is economically beneficial.

Exhibits

The staff concludes that the following parts of exhibit A and the following exhibit F drawings conform to the Commission's rules and regulations. The staff therefore includes these in the license:

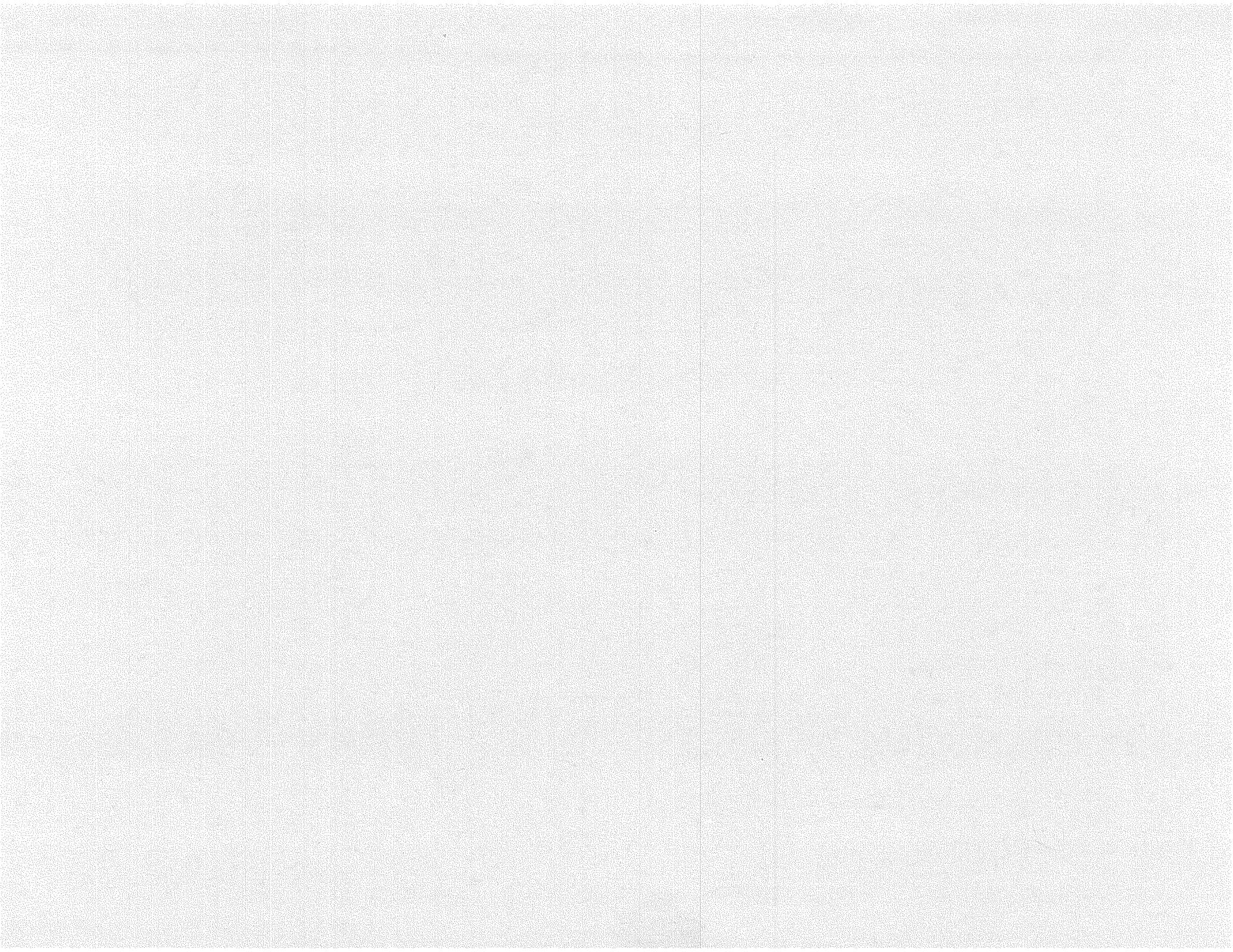
Exhibit A - The following sections of exhibit A filed November 25, 1988:

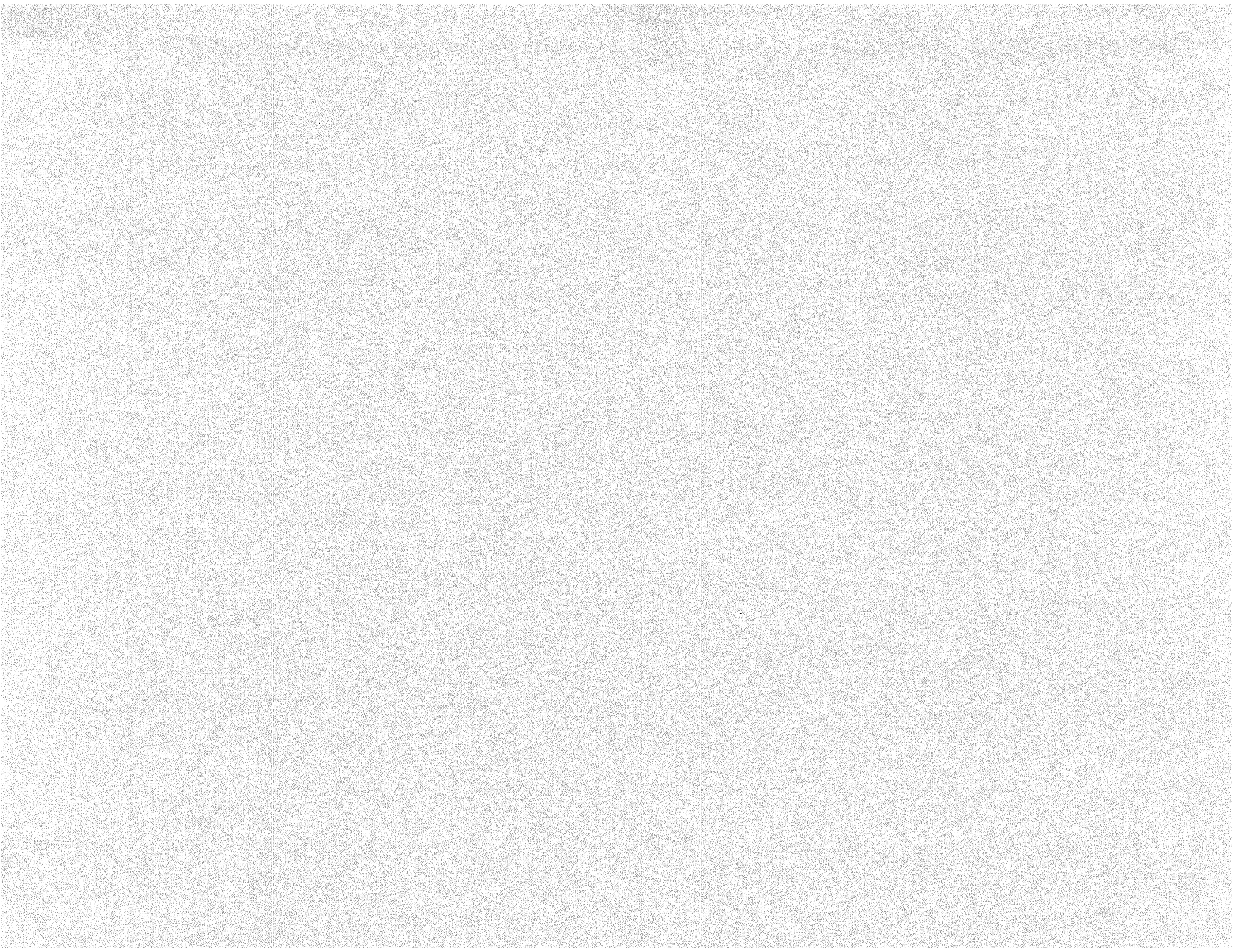
The turbine and generator description on page A-2; the transmission line description on pages A-2 and A-3, as corrected by letter dated April 10, 1989; and the additional mechanical and electrical equipment description on pages A-1 through A-7.

<i>Exhibit</i>	<i>FERC No.</i>	<i>Showing</i>
F-1	2775-3	Site Plan
F-2	2775-4	Powerhouse Plan and Elevation

Preparers

Ronald E. Spath, Civil Engineer
C. Frank Miller, Electrical Engineer





[¶ 62,297]

Linweave, Inc., Project No. 2775-001 - Massachusetts

Order Issuing New License (Minor Project)

(Issued June 29, 1989)

Fred E. Springer, Director, Office of Hydropower Licensing.

Linweave, Inc. has filed a license application under Part I of the Federal Power Act (Act) to continue to operate and maintain the Gill Mill (D Wheel) Project, located on the Holyoke Canal, in Hampden County, Massachusetts. The hydroelectric facilities located along the Holyoke Canal system affect navigable waters of the United States.¹ The license for the project, which was issued on July 19, 1977 [59 FPC 736], with an effective date of March 1, 1941, expires on February 28, 1991. The existing license waived section 15 of the Act only as it relates to federal takeover.

Notice of the application has been published. No protests were filed in this proceeding, and

no agency objected to issuance of this license. Comments received from interested agencies and individuals have been fully considered in determining whether to issue this license. Motions to intervene were filed by the City of Holyoke Gas & Electric Department and the Holyoke Water Power Company (HWP) in order to be parties in this proceeding. HWP also requests that any license issued which utilizes HWP's Holyoke Canal System water be conditioned, as was the previous license, to require cooperation with HWP as the licensee for the Hadley Falls Project No. 2004. Article 202 is included to provide for appropriate cooperation.

¹ See 33 FPC 593, 594 (1965).

Comprehensive Development

Sections 4(e) and 10(a)(1) of the Act require the Commission to consider and balance in the public interest all uses of the waterway on which a project is proposed to be located.

The Gill Mill (D Wheel) Project has operated under the terms of its existing license since 1977. In the environmental assessment (EA), the staff analyzed the environmental effects of the continued operation of the project. Neither the resource agencies nor staff identified any significant conflicts between continued operation of the project as proposed by the applicant, and the environmental values of the project area.

Three alternatives to relicensing the Gill Mill (D Wheel) Project were also considered by the staff in its EA. They include: (1) issuance of an annual license; (2) issuance of a non-power license; and (3) denial of a license application. No alternative was identified that would have a higher or better use of the project in terms of providing power and environmental benefits without significant environmental cost.

Section 10(a)(2) of the Act also requires the Commission to consider the extent to which a proposed project is consistent with an existing federal, state, or local comprehensive plan. Under section 10(a)(2), federal, and state agencies filed seven comprehensive plans that address resources in Massachusetts. Of these plans, staff identified and reviewed four plans relevant to this project.² No conflicts between the proposed Gill Mill (D Wheel) Project and these four plans were found.

Therefore, the project as conditioned is determined to be best adapted to a comprehensive plan, pursuant to Section 10(a) of the Act, for improving a waterway and would provide for adequate protection, mitigation, and enhancement of fish and wildlife pursuant to Section 10(j) of the Act.

Recommendations of Federal and State Fish and Wildlife Agencies

Section 10(j) of the Act requires the Commission to include license conditions, based on recommendations of federal and state fish and wildlife agencies, for the protection, mitigation, and enhancement of fish and wildlife. The environmental assessment for the Gill Mill (D Wheel) Project addresses the concerns of the federal and state fish and wildlife agencies;

however, recommendations are not needed for continued operation of the project.

ECPA Findings

Section 10(a)(2)(C) and section 15(a) of the Federal Power Act, as amended by the Electric Consumers Protection Act of 1986 (ECPA), requires the Commission to consider in writing the following factors in issuing new licenses.

The following discussions apply individually and collectively to the eight hydro projects owned and operated by Linweave, Inc. The eight projects are identified by FERC project numbers: 2497, 2758, 2766, 2768, 2770, 2771, 2772, and 2775.

Consumption Efficiency Improvement Programs (Section 10(a)(2)(C))

Since the applicant's primary business is the manufacture of paper products and not the generation or sale of electric power, no discussion of on-going or planned conservation and load-management programs is required in this document.

The Plans and Abilities of the Applicant to Comply with the Articles, Terms, and Conditions of Any License Issued to it and Other Applicable Provisions of Part I of the Act (Section 15(a)(2)(A))

The staff has reviewed the plans of the applicant to comply with the articles, terms, and conditions of any license issued to Linweave, Inc.

A review of the compliance record of the applicant indicates that the applicant's compliance with the terms and conditions of its current license has been satisfactory. The staff concludes that the applicant has demonstrated its ability to comply in a good faith manner with all articles, terms, and conditions of the license, and the staff concludes that the applicant would perform in a competent manner if issued a new license for the project.

The Plans of the Applicant to Manage, Operate, and Maintain the Project Safely (Section 15(a)(2)(B))

The staff has reviewed the applicant's plans to manage, operate, and maintain the project safely. There is no dam within the project boundaries to operate and maintain.

² Connecticut River 1982 Water Quality Management Plan, June 1983, Massachusetts Division of Water Pollution Control; Connecticut River Basin Fish Passage, Flow, and Habitat Alteration Considerations in Relation to Anadromous Fish Restoration, October 1981, Technical Committee for Fisheries Management of the Connecticut River; The Outdoor

Heritage of Massachusetts, SCORP 1983-1988, December 1983, Massachusetts Department of Environmental Management; A Strategic Plan for the Restoration of Atlantic Salmon to the Connecticut River Basin, September 1982, Policy Committee for Fisheries Management of the Connecticut River.

The eight projects draw carefully prescribed quantities of water from the Second Level Canal and discharge it to the Connecticut River below the projects. There is a flood wall located between the eight projects and the Connecticut River that ensures protection during flood conditions. When the river elevations reach 62 feet or higher, the eight projects are shut down and the headgates and tailrace gates are closed. The City of Holyoke Department of Public Works is responsible for implementing the flood wall operation schedule and closing the tailrace gates of the eight projects.

The applicant has operated the eight projects with a perfect employee safety and public safety record. There have been no deaths or lost-time injuries to employees from project operations, nor is there any record of injury or death to the public within the project boundaries.

Based upon a review of the available information on the project safety plans, the staff concludes that the applicant is capable of managing, operating, and maintaining the project in a safe manner.

The Plans and Abilities of the Applicant to Operate and Maintain the Project in a Manner Most Likely to Provide Efficient and Reliable Electric Service (Section 15(a)(2)(C))

The staff has reviewed the operation inspection reports by the NYRO and the applicant's project operation reports.

The applicant has full time employees in its engineering department that monitor the eight projects, including physically checking each unit several times daily. Additionally, the projects have automatic safety devices to shut down the units in case of abnormal operating conditions.

The applicant cleans the trashracks and lubricates the mechanical machinery regularly. The applicant provides for periodic inspection of the penstock and provides maintenance when needed.

The applicant has reported a total of seven unscheduled outages for the eight projects over the last five years. The outages ranged in length from 48 days to 114 days during which time the equipment was repaired. The applicant has rebuilt and/or overhauled seven of the generating units since February 1979 when the applicant purchased the eight projects.

The applicant has no plans to increase generation at the eight projects. The main reason for this is that the applicant is entitled to withdraw only a carefully prescribed quantity of water from the Second Level Canal under the terms of certain indenture agreements with HWP.

The applicant is in the paper-products manufacturing business, which is a highly competitive field and is very energy-intensive. Because of the competition in the paper-products market, the applicant must operate the project in the most efficient and reliable manner to maximize electric power sales revenues available to offset power purchases for use in its paper manufacturing operations.

The staff concludes that the project is being operated in an efficient and reliable manner.

The Need of the Applicant Over the Short and Long Terms for the Electricity Produced by the Project to Serve Its Customers (Section 15(a)(2)(D))

The applicant, Linweave, Inc., is a manufacturer of paper products and, as such, does not sell any of the electrical output of the eight hydroelectric projects (which it owns and operates as the current licensee) to end-use customers. Therefore, this document does not address the applicant's need for the electricity generated by the eight projects to serve its customers. The paper-products manufacturing business is today a highly competitive industry. Production costs in this industry are very energy intensive, due to the large amounts of electric energy used for the manufacture of paper. When deprived of a low-cost source (or sources) of electric energy, a paper manufacturer cannot survive in the market place for paper products.

All eight of the hydropower projects for which the applicant is applying for new licenses are operated in the run-of-the-river mode; and, as a result, the capacity and energy produced by them depend upon the available streamflow provided by the Second Level Canal of the Holyoke Water Power Company. This flow is subject to seasonal and yearly variations. The applicant's electric power demands at the several paper mills are determined by factors which are in no way correlated with water flow in the canal system. Because of this, and for other reasons affecting the applicant's paper-making electrical energy costs, Linweave has found it to be economically advantageous to sell the output of the eight projects to a local electric utility and purchase the power required by the Linweave paper mills.

The total net electrical output from all eight of the projects is currently being sold, and is expected to continue to be sold to Fitchburg Gas and Electric Light Company, pursuant to a power sales agreement dated March 25, 1982.

The applicant's present and future need for the electric power produced by the eight hydro projects, with which this document is concerned, can be stated in few words: revenues

received from the sale of project capacity and energy are used to offset the cost of capacity and energy purchased on an "as-needed, total requirements" purchase agreement with a local utility, thus improving Linweave's competitive position in the paper products marketplace, which may prove necessary for industrial survival.

The total installed capacity of the eight hydro projects is 3.362 megawatts, and the applicant estimates that the projects are capable of producing an average of 16,997 megawatthours of energy annually.

The staff concludes that there is a need for the project power over the short and the long term.

The Existing and Planned Transmission Services of the Applicant (Section 15(a)(2)(E))

If the applicant is issued new licenses for the eight hydro projects listed above, no changes of the existing transmission system, its operation, or operating characteristics would occur as a result thereof, and none are planned.

If new licenses are denied, the transmission system, or systems associated with the eight projects, would no longer be required, since the applicant would no longer generate power to sell. The applicant would continue to purchase "all requirements" power required for the operation of the paper mills from a local utility. Transmission would not be affected by denial of the licenses.

The staff concludes that the transmission services are adequate as they currently exist.

Whether the Plans of the Applicant will be Achieved, to the Greatest Extent Possible, in a Cost Effective Manner (Section 15(a)(2)(F))

The Gill Mill was constructed in 1880 and the present hydroelectric generating unit rebuilt in 1983. No new construction is proposed. The annual cost of operating the project would be its annual operation and maintenance costs. Continued future project operation would serve to provide an economically efficient source of energy for Linweave, Inc. The staff concludes that the project is economically beneficial.

The Applicant's Record of Compliance with the Terms and Conditions of the Existing License (Section 15(a)(3))

The compliance records of Linweave, Inc., with the terms and conditions of its existing licenses, are satisfactory. Further, the licensee has maintained the projects in a satisfactory manner.

The licensee is reminded that failure to comply with the terms and conditions of this license will subject it to the enforcement and penalty provisions of section 31 of the Federal Power Act.

Term of License

Section 15 of the Act, as amended by ECPA specifies that any license issued under section 15 shall be for a term which the Commission determines to be in the public interest, but not less than 30 years, nor more than 50 years from the date the license is issued. This provision is similar to pre-ECPA Commission policy, which was to establish from the expiration date of the existing license, 30-year terms for those projects which proposed no new construction or capacity, 40-year terms for those projects that proposed a moderate amount of new development, and 50-year terms for those projects that proposed a substantial amount of new development.³

Linweave, Inc. proposes no modifications to the existing project facilities or change in operation of the project. However, the existing license will not expire until February 28, 1991. Accordingly, the new license for the project will be for a term of 30 years from the expiration of the existing license.

Summary of Findings

An EA was issued for this project. Background information, analysis of impacts, support for related license articles, and the basis for a finding of no significant impact on the environment are contained in the EA attached to this order. Issuance of this license is not a major federal action significantly affecting the quality of the human environment.

The design of this project is consistent with the engineering standards governing dam safety. The project will be safe if operated and maintained in accordance with the requirements of this license. Analysis of related issues is provided in the Safety and Design Assessment attached to this order.

The Director, Office of Hydropower Licensing, concludes that the project would not conflict with any planned or authorized development, and would be best adapted to comprehensive development of the waterway for beneficial public uses.

The Director orders:

(A) This license is issued to Linweave, Inc. (licensee), for a period of 30 years, effective March 1, 1991, to operate and maintain the Gill Mill (D Wheel) Project. This license is

³ See *Montana Power Company*, 56 FPC 2008 (1976).

subject to the terms and conditions of the Act, which is incorporated by reference as part of this license, and subject to the regulations the Commission issues under the provisions of the Act.

(B) The project consists of:

(1) All lands, to the extent of the licensee's interests in those lands, shown by exhibit G:

<i>Exhibit</i>	<i>FERC No.</i>	<i>Showing</i>
G-1	2775-3	Project Location

(2) Project works consisting of: (a) a gated intake with submerged trashracks located on the second level canal of the Holyoke Water Power Company; (b) a 12-foot-diameter penstock 295 feet long; (c) a 450-kW generating unit located within the Gill Mill building; (d) two parallel 7-foot-wide by 10-foot-high arched brick-lined tailrace tunnels extending from the draft tube to an existing outlet structure; (e) a concrete gated outlet structure where tailwater empties into a channel that leads to the Connecticut River; (f) a 13.8-kV transmission line 660 feet long that connects the project to an existing transmission line; and (g) appurtenant facilities.

The project works generally described above are more specifically shown and described by those portions of exhibits A and F recommended for approval in the attached Safety and Design Assessment.

(3) All of the structures, fixtures, equipment or facilities used to operate or maintain the project, all portable property that may be employed in connection with the project and all riparian or other rights that are necessary or appropriate in the operation or maintenance of the project.

(C) The exhibit G described above and those sections of exhibits A and F recommended for approval in the attached Safety and Design Assessment are approved and made part of the license.

(D) The following sections of the Act are waived and excluded from the license for this minor project:

4(b), except the second sentence; 4(e), insofar as it relates to approval of plans by the Chief of Engineers and the Secretary of the Army; 6, insofar as it relates to public notice and to the acceptance and expression in the license of terms and conditions of the Act that are waived here; 10(c), insofar as it relates to depreciation reserves; 10(d); 10(f); 14, except insofar as the power of condemnation is reserved; 15; 16; 19; 20; and 22.

(E) This license is subject to the articles set forth in Form L-9 (October 1975) [reported at 54 FPC 1852], entitled "Terms and Conditions of License for Constructed Minor Project

Affecting Navigable Waters of the United States", and the following additional articles:

Article 201. The licensee shall pay the United States the following annual charge, effective March 1, 1991:

For the purpose of reimbursing the United States for the cost of administration of Part I of the Act, a reasonable amount as determined in accordance with the provisions of the Commission's regulations in effect from time to time. The authorized installed capacity for that purpose is 600 horsepower.

Article 202. The Licensee shall cooperate with the licensee for Project No. 2004 in order that the conditions of Article 16 of the license for Project No. 2004 can be fulfilled.

Article 401. Authority is reserved to the Commission to require the licensee to construct, operate, and maintain, or provide for the construction, operation, and maintenance of such fishways, as may be prescribed by the Secretary of the Interior pursuant to section 18 of the Federal Power Act.

Article 402. (a) In accordance with the provisions of this article, the licensee shall have the authority to grant permission for certain types of use and occupancy of project lands and waters and to convey certain interests in project lands and waters for certain types of use and occupancy, without prior Commission approval. The licensee may exercise the authority only if the proposed use and occupancy is consistent with the purposes of protecting and enhancing the scenic, recreational, and other environmental values of the project. For those purposes, the licensee shall also have continuing responsibility to supervise and control the use and occupancies for which it grants permission, and to monitor the use of, and ensure compliance with the covenants of the instrument of conveyance for, any interests that it has conveyed, under this article. If a permitted use and occupancy violates any condition of this article or any other condition imposed by the licensee for protection and enhancement of the project's scenic, recreational, or other environmental values, or if a covenant of a conveyance made under the authority of this article is violated, the licensee shall take any lawful action necessary to correct the violation. For a permitted use or occupancy, that action includes, if necessary, cancelling the permission to use and occupy the project lands and waters and requiring the removal of any non-complying structures and facilities.

(b) The type of use and occupancy of project lands and water for which the licensee may grant permission without prior Commission approval are: (1) landscape plantings; (2) non-commercial piers, landings, boat docks, or similar structures and facilities that can accommo-

date no more than 10 watercraft at a time and where said facility is intended to serve single-family type dwellings; and (3) embankments, bulkheads, retaining walls, or similar structures for erosion control to protect the existing shoreline. To the extent feasible and desirable to protect and enhance the project's scenic, recreational, and other environmental values, the licensee shall require multiple use and occupancy of facilities for access to project lands or waters. The licensee shall also ensure, to the satisfaction of the Commission's authorized representative, that the use and occupancies for which it grants permission are maintained in good repair and comply with applicable state and local health and safety requirements. Before granting permission for construction of bulkheads or retaining walls, the licensee shall: (1) inspect the site of the proposed construction, (2) consider whether the planting of vegetation or the use of riprap would be adequate to control erosion at the site, and (3) determine that the proposed construction is needed and would not change the basic contour of the reservoir shoreline. To implement this paragraph (b), the licensee may, among other things, establish a program for issuing permits for the specified types of use and occupancy of project lands and waters, which may be subject to the payment of a reasonable fee to cover the licensee's costs of administering the permit program. The Commission reserves the right to require the licensee to file a description of its standards, guidelines, and procedures for implementing this paragraph (b) and to require modification of those standards, guidelines, or procedures.

(c) The licensee may convey easements or rights-of-way across, or leases of, project lands for: (1) replacement, expansion, realignment, or maintenance of bridges and roads for which all necessary state and federal approvals have been obtained; (2) storm drains and water mains; (3) sewers that do not discharge into project waters; (4) minor access roads; (5) telephone, gas, and electric utility distribution lines; (6) non-project overhead electric transmission lines that do not require erection of support structures within the project boundary; (7) submarine, overhead, or underground major telephone distribution cables or major electric distribution lines (69-kV or less); and (8) water intake or pumping facilities that do not extract more than one million gallons per day from a project reservoir. No later than January 31 of each year, the licensee shall file three copies of a report briefly describing for each conveyance made under this paragraph (c) during the prior calendar year, the type of interest conveyed, the location of the lands subject to the conveyance, and the nature of the use for which the interest was conveyed.

(d) The licensee may convey fee title to, easements or rights-of-way across, or leases of project lands for: (1) construction of new bridges or roads for which all necessary state and federal approvals have been obtained; (2) sewer or effluent lines that discharge into project waters, for which all necessary federal and state water quality certification or permits have been obtained; (3) other pipelines that cross project lands or waters but do not discharge into project waters; (4) non-project overhead electric transmission lines that require erection of support structures within the project boundary, for which all necessary federal and state approvals have been obtained; (5) private or public marinas that can accommodate no more than 10 watercraft at a time and are located at least one-half mile from any other private or public marina; (6) recreational development consistent with an approved Exhibit R or approved report on recreational resources of an Exhibit E; and (7) other uses, if: (i) the amount of land conveyed for a particular use is five acres or less; (ii) all of the land conveyed is located at least 75 feet, measured horizontally, from the edge of the project reservoir at normal maximum surface elevation; and (iii) no more than 50 total acres of project lands for each project development are conveyed under this clause (d)(7) in any calendar year. At least 45 days before conveying any interest in project lands under this paragraph (d), the licensee must submit a letter to the Director, Office of Hydropower Licensing, stating its intent to convey the interest and briefly describing the type of interest and location of the lands to be conveyed (a marked exhibit G or K map may be used), the nature of the proposed use, the identity of any federal or state agency official consulted, and any federal or state approvals required for the proposed use. Unless the Director, within 45 days from the filing date, requires the licensee to file an application for prior approval, the licensee may convey the intended interest at the end of that period.

(e) The following additional conditions apply to any intended conveyance under paragraph (c) or (d) of this article:

(1) Before conveying the interest, the licensee shall consult with federal and state fish and wildlife or recreation agencies, as appropriate, and the State Historic Preservation Officer.

(2) Before conveying the interest, the licensee shall determine that the proposed use of the lands to be conveyed is not inconsistent with any approved exhibit R or approved report on recreational resources of an exhibit E; or, if the project does not have an approved exhibit R or approved report on recreational resources, that

the lands to be conveyed do not have recreational value.

(3) The instrument of conveyance must include covenants running with the land adequate to ensure that: (i) the use of the lands conveyed shall not endanger health, create a nuisance, or otherwise be incompatible with overall project recreational use; and (ii) the grantee shall take all reasonable precautions to insure that the construction, operation, and maintenance of structures or facilities on the conveyed lands will occur in a manner that will protect the scenic, recreational, and environmental values of the project.

(4) The Commission reserves the right to require the licensee to take reasonable remedial action to correct any violation of the terms and conditions of this article, for the protection and enhancement of the project's scenic, recreational, and other environmental values.

(f) The conveyance of an interest in project lands under this article does not in itself change the project boundaries. The project boundaries may be changed to exclude land conveyed under this article only upon approval of revised exhibit G or K drawings (project boundary maps) reflecting exclusion of that land. Lands conveyed under this article will be excluded from the project only upon a determination that the lands are not necessary for project purposes, such as operation and maintenance, flowage, recreation, public access, protection of environmental resources, and shoreline control, including shoreline aesthetic values. Absent extraordinary circumstances, proposals to exclude lands conveyed under this article from the project shall be consolidated for consideration when revised exhibit G or K drawings would be filed for approval for other purposes.

(g) The authority granted to the licensee under this article shall not apply to any part of the public lands and reservations of the United States included within the project boundary.

(F) The licensee shall serve copies of any Commission filing required by this order on any entity specified in this order to be consulted on matters related to that filing. Proof of service on these entities must accompany the filing with the Commission.

(G) This order is issued under authority delegated to the Director and is final unless appealed to the Commission by any party within 30 days from the issuance date of this order. Filing an appeal does not stay the effective date of this order or any date specified in

this order. The licensee's failure to appeal this order shall constitute acceptance of the license.

Environmental Assessment¹

Federal Energy Regulatory Commission
Office of Hydropower Licensing
Division of Project Review

Date: June 16, 1989

Project name: Gill Mill, D Wheel, Hydroelectric Project

FERC Project No. 2775-001

A. Application

1. Application type: New minor license
2. Date filed with the Commission: November 25, 1988
3. Applicant: Linweave, Inc.
4. Water body: Holyoke Canal; River basin: Connecticut
5. Nearest city or town: Holyoke (See figure 1.)
6. County: Hampden; State: Massachusetts

B. Purpose and Need for Action

1. Purpose.

Linweave estimates the average annual energy generation of the Gill Mill, D Wheel, Hydroelectric Project is 1,790 megawatt-hours. Project power is sold to the Fitchburg Gas and Electric Light Company.

2. Need for power.

The power from the project is useful in meeting a small part of the need for power projected for the New England Power Pool area of the Northeast Power Coordinating Council (NPCC) region. Power generated at the project displaces fossil-fueled power generation in the NPCC region, thus conserving nonrenewable fossil fuels and reducing the emission of noxious byproducts caused by the combustion of fossil fuels.

C. Proposed Project and Alternatives

1. Description of the proposed action. (See figure 2.)

The existing operating project was issued an initial license in 1977, which will expire in 1991. The licensee has filed for a new license for the continued operation of the project. The existing operating project consists of: (i) a gated intake with submerged trashracks located on the second level canal of the Holyoke Water Power Company; (ii) a 12-foot-

¹ Figures and attachments referenced in the text are omitted from this document due to reproduction requirements.

diameter penstock 295 feet long; (iii) an existing 450-kW generating unit located within the Gill Mill building; (iv) two parallel 7-foot-wide by 10-foot-high arched brick-lined tailrace tunnels extending from the draft tube to an existing outlet structure; (v) a concrete gated outlet structure where tailwater empties into a channel that leads to the Connecticut River; (vi) a 13.8-kV transmission line 660 feet long that connects the project to an existing transmission line; and (vii) appurtenant facilities. The project operates in a run-of-river mode. Linweave does not propose any construction or change in project operation. The Holyoke Water Power Company controls flows from the Connecticut River into the canal system under a FERC major license granted to Project No. 2004.

2. Applicant's proposed mitigative measures.

Since Linweave proposes to continue operating the project as in the past, with no new construction, no changes to the hydroelectric project, and no changes in the use and release of water, Linweave proposes no mitigative measures.

3. Federal lands affected.

No.

4. Alternatives to the proposed project.

a. *Issuance of an annual license.* Section 15(a) of the Federal Power Act (Act), 16 U.S.C. § 808(a), provides for the issuance of annual licenses to the prior licensee if the license expires pending the relicensing determination. Under this alternative, an annual license would continue to be issued to Linweave until a new license is issued. The annual license contains the same terms as the expired license, thereby maintaining the status quo.

b. *Issuance of a non-power license.* Section 15(f) of the Act, § 808(b), authorizes the Commission to issue a license for nonpower use when the Commission "finds that in conformity with a comprehensive plan for improving or developing a waterway or waterways for beneficial public uses all or part of any licensed project should no longer be used or adapted for use for power purposes." A license that is granted by the Commission for nonpower use is temporary. When the Commission finds that a state, municipality, interstate agency, or another federal agency is authorized and willing to assume regulatory supervision of the lands and facilities included under the nonpower license and does so, the Commission shall thereupon terminate the nonpower license.

c. *Denial of the license application.* Denial of the license application could lead to removal of the power facilities and removal of all project works.

D. Consultation and Compliance

1. Fish and wildlife agency consultation (Fish & Wildlife Coordination Act).

- a. U.S. Fish & Wildlife Service: Yes.
- b. State(s): Yes.
- c. National Marine Fisheries Service: Yes.

2. Section 7 consultation (Endangered Species Act).

- a. Listed species: Present.
- b. Consultation: Not required.

Remarks: The federally listed endangered shortnose sturgeon under the jurisdiction of the National Marine Fisheries Service (NMFS) inhabits the lower segment of the Connecticut River from the river's mouth upstream to the Holyoke dam. A small landlocked population is found in the pool above the Holyoke dam (Taubert, 1980). Dadswell, *et al.* (1984) estimated that between 800 and 1000 shortnose sturgeon inhabit the lower portion (below Holyoke) of the Connecticut River. The NMFS reports that due to the trashrack spacing, any sturgeon which might enter the canal would be prevented from entrainment into the project (personal communication, Chris Mantzaris, staff, National Marine Fisheries Service, Gloucester, Massachusetts, June 13, 1989).

3. Section 401 certification (Clean Water Act).

Required; applicant requested certification on 10/17/88.

Status: Granted by the certifying agency on 03/30/89.

4. Cultural resource consultation (Historic Preservation Act).

- a. State Historic Preservation Officer: Yes.
- b. National Park Service: Yes.
- c. *National Register* status: Eligible or listed.
- d. Council: Not required.
- e. Further consultation: Not required.

Remarks: The project is adjacent to the Holyoke Canal System, a property listed in the *National Register of Historic Places*. Since there would be no redevelopment, new construction, or changes to the exterior of the property, the project would not affect the canal system or any other *National Register* or eligible properties. The SHPO concurs with this finding (letter from Valerie A. Talmage, Executive Director, Massachusetts Historical Commission, and State Historic Preservation Officer, Boston, Massachusetts, December 9, 1988).

5. Recreational consultation (Federal Power Act).

- a. U.S. Owners: No.
- b. National Park Service: Yes.

c. State(s): Yes.

6. Wild and scenic rivers (Wild and Scenic Rivers Act).

Status: None.

7. Land and Water Conservation Fund lands and facilities (Land and Water Conservation Fund Act).

Status: None.

E. Comments

1. The following agencies and entities provided comments on the application or filed a motion to intervene in response to the public notice dated 03/24/89.

<i>Commenting agencies and other entities</i>	<i>Date of letter</i>
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Department of the Army, New England Division Corps of Engineers	05/11/89
Environmental Protection Agency	05/17/89
Department of the Interior	05/19/89
Massachusetts Division of Fisheries and Wildlife	05/30/89

<i>Motions to intervene</i>	<i>Date of motion</i>
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City of Holyoke, Gas and Electric Department	03/28/89
Holyoke Water Power Company	05/24/89

2. The applicant did not respond to the comments or motion(s) to intervene.

F. Affected Environment

1. General description of the locale. (See figure 3.)

a. Description of the Connecticut River Basin.

The Connecticut River Basin, with a drainage area of 11,765 square miles, is the largest river basin in New England. Extending from the northernmost part of New Hampshire to Long Island Sound, the river basin has a maximum length in a north-south direction of about 280 miles and a maximum width of about 62 miles. The total drainage area of the basin is 11,765 square miles. The principal tributaries to the mainstem Connecticut River, by state, are the Passumpsic, White, West, Ottauquechee, and Black Rivers in Vermont; the Ammonoosuc, Mascoma, Ashuelot, and Sugar Rivers in New Hampshire; the Millers, Deerfield, Chicopee, and Westfield Rivers in Massachusetts; and the Farmington River in Connecticut.

This complex of rivers and tributaries constitutes one of the most extensively developed hydropower systems in the U.S. There is now a major effort by federal, state, and private sectors to restore Atlantic salmon to the Connecticut River Basin.

The project is located in a heavily industrialized setting between the second level of the Holyoke Canal system and the Connecticut River. The climate is typical of inland Connecticut and Massachusetts with an average temperature of 49.8 degrees Fahrenheit and an average annual precipitation of 44.39 inches.

b. Licensed and exempted projects.

There are 62 existing licensed projects and 38 exempted projects in the Connecticut River Basin, as of June 1, 1989.

c. Pending applications.

There are 10 pending license applications in the Connecticut River Basin, as of June 1, 1989.

d. Cumulative impacts.

Cumulative impacts are defined as impacts on the environment that result from the incremental impacts of an action when added to other past, present, and reasonably foreseeable future actions regardless which agency or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (40 C.F.R., Part 1508.7).

A target resource is an important resource that may be cumulatively affected by multiple development within a basin. The staff identified Atlantic salmon as the target resource in the Connecticut River Basin (Federal Energy Regulatory Commission, 1986). The selection was based on the regional significance and geographic distribution of this species within the river basin. This anadromous fishery resource is described below in section F(2d). Impacts to Atlantic salmon are discussed in section G.

2. Descriptions of the resources in the project impact area (Source: Linweave, Inc., application, exhibit E, unless otherwise indicated).

a. *Geology and soils.* Bedrock in the project area is interbedded sandstone, shale, conglomerate, and basaltic lava. The glacial till deposits that lie on the glaciated surface of the bedrock are overlain by varied glacial lake deposits. The original dry, sandy, surface soils in the project area have been highly altered by construction of the project and by fill and construction activities associated with urban development of the area.

b. *Streamflow.* Water flow in the canal system is controlled at the canal gatehouse in order to supply necessary water to various hydropower and industrial facilities along the

canal. The amount of flow entering the canal system ranges from no flow, when the gate-house is shut down, to 5,155 cubic feet per second, which is the maximum hydraulic capacity of the canal.

c. *Water quality*: The Connecticut River upstream of Holyoke dam is classified as Class B water by the Massachusetts Division of Water Pollution. Class B water is suitable for primary and secondary contact recreation and fish and wildlife resources. Class B water must have dissolved oxygen (DO) levels greater than 5.0 milligrams per liter (mg/l) and a pH between 6.5 and 8.0. The first level canal is classified as Class C. Class C water is suitable for secondary contact recreation and fish and wildlife resources and must have a DO level greater than 5.0 mg/l and a pH between 6.5 and 9.0 standard units. Water in the project area conforms to the state water quality standards.

d. *Fisheries*:

Anadromous: Present.

Anadromous fish species found in the Connecticut River in the vicinity of the project include American shad, Atlantic salmon, blueback herring, sea lamprey, striped bass, shortnose sturgeon, and American eel (catadromous).

Resident: Present.

Resident fish species found in the Connecticut River in the vicinity of the project include carp, channel catfish, smallmouth bass, largemouth bass, spottail shiner, white perch, bluegill, rainbow trout, and brown trout.

e. *Vegetation*: Dominant vegetative species in the vicinity of the project include oak, maple, white pine, pitch pine, grasses, and ornamental shrubs.

f. *Wildlife*: Undeveloped land in the project area provides habitat for the gray squirrel, eastern cottontail rabbit, raccoon, muskrat, beaver, weasel, pheasant, and small field mammals (mice and voles). The industrial area is inhabited by English sparrows, starlings, robins, mockingbirds, Norway rats, raccoons, and eastern cottontail rabbits.

g. *Cultural*:

There are properties listed on, or eligible for listing on, the *National Register of Historic Places* in the project impact area.

Description: The Holyoke Canal System, a contributing element in the Holyoke Canal Historic District, is listed on the *National Register of Historic Places* and is within the area of the project's potential environmental impact. The portion of the canal in the project area was constructed between 1854 and 1857.

h. *Visual quality*: The project is in an industrial area. Its appearance is consistent with that of the surrounding buildings and structures.

i. *Recreation*: The immediate project area receives no significant recreational use because of its location in a highly industrialized area. No recreational facilities are located at the project. Recreational facilities including playgrounds, swimming pools, and a skating rink are available for use within walking distance of the project. The Connecticut River in the project vicinity is used for boating and fishing.

j. *Land use*: The project is entirely within the city of Holyoke. Land in the project area is primarily used for commercial, industrial, and residential purposes. The canal system is used for generating hydroelectric power at several locations.

k. *Socioeconomics*: The socioeconomic well-being of the area is influenced by industrial and urban development.

G. *Environmental Issues and Proposed Resolutions*

There are 3 issues addressed below.

1. *Cumulative impacts on Atlantic salmon resulting from developing several hydropower projects in the Connecticut River Basin*: The Atlantic salmon is currently a primary target species for a major federal, state, and private sector restoration effort. The goal of the restoration program is to provide and to maintain a sport fishery for Atlantic salmon in the Connecticut River, and to restore and maintain a spawning population in selected tributaries (Federal Energy Regulatory Commission, 1986).

Seaward migrating salmon smolts in the river basin pass numerous hydropower developments where they may become entrained and impinged. The more hydropower facilities outmigrating fish have to pass, the greater the fish losses. Among these hydropower facilities are the Holyoke dam and the canal system.

When river discharges are high and water is flowing over the dam, migrating fish pass downstream with little or no delay (Northeast Utilities Service Company, 1984). On the other hand, outmigrating fish would be entrained into the canal system by high flows entering the canal if they arrive at the dam when flashboards, permitting little or no spillage, are in place. Once in the canal, escape is very difficult. Fish can then be entrained in the turbines of hydropower plants operating along the canal.

On February 26, 1988, the Commission ordered the Holyoke Water Power Company (HWPC) to spill water over Holyoke dam when

salmon smolts are migrating downstream (Federal Energy Regulatory Commission, 1988a). [HWPC is the licensee for the Hadley Falls Project (FERC Project No. 2004) and the entity that controls the dam and the water going into the canal.] Spilling water over the Holyoke dam allows migrating salmon smolts to pass safely downstream in the spill, instead of entering the canal system.

Canal users and the HWPC have since implemented an economic dispatch agreement, in which the HWPC passes all flow downstream at the Holyoke dam and sells the users electricity, instead of water, when salmon smolts are migrating downstream. Linweave participates in this agreement. This arrangement prevents flow from entering the canal and attracting outmigrating Atlantic salmon, and minimizes the number of outmigrating Atlantic salmon trapped in the canal, and the number of project-related impacts to fish in the river basin.

Continuing to operate the Gill Mill, D Wheel, Hydroelectric Project would not contribute to cumulative adverse impacts on Atlantic salmon.

2. *Authority to prescribe fish passage facilities.* The Department of the Interior states that fish passage facilities may be needed at the project in the future, and, by letter of May 24, 1989 they reserve the authority to prescribe such fish facilities. The Commission reserves authority to require the licensee to provide fishways, as may be prescribed by the Secretary of Interior pursuant to section 18 of the Federal Power Act, if the need arises in the future.

3. *Entraining fish in the intake structure:* The Massachusetts Division of Fisheries and Wildlife (DFW) recommended the trashracks at the intake structures have a bar spacing not greater than 1 inch to prevent the entrainment of fish. The project's intake opening includes trashracks with one-inch slot width spacing between bars. The bar spacing at the existing structure satisfies the DFW's recommendation.

H. Environmental Impacts

1. Assessment of impacts expected from the applicant's proposed project (P), with the applicant's proposed mitigation and any conditions set by a federal land management agency; the proposed project with any additional mitigation recommended by the staff (Ps); and any action alternative considered (A).

Assessment symbols indicate the following impact levels:

O = None;	1 = Minor;
2 = Moderate;	3 = Major;
A = Adverse;	B = Beneficial;
L = Long-term;	S = Short term.

Resource	P	Impact Ps	A
a. Geology-Soils	0		
b. Streamflow	0		
c. Water quality:			
Temperature	0		
Dissolved oxygen	0		
Turbidity and sedimentation	0		
d. Fisheries:			
Anadromous	0		
Resident	0		
e. Vegetation	0		
f. Wildlife	0		
g. Cultural:			
Archeological	0		
Historical	0		
h. Visual quality	0		
i. Recreation	0		
j. Land use	0		
k. Socioeconomics	0		

2. Recommended alternative (including proposed, required, and recommended mitigative measures):

Proposed project.

3. Reason(s) for selecting the preferred alternative.

The power generated at this project is produced without any known adverse environmental impacts.

I. Unavoidable Adverse Impacts of the Recommended Alternative

There are no known adverse impacts.

J. Conclusion

Finding of No Significant Impact. Approval of the recommended alternative [H(2)] would not constitute a major federal action significantly affecting the quality of the human environment; therefore, an environmental impact statement (EIS) will not be prepared.

K. Literature Cited

- Dadswell, M.J., B.D. Taubert, T.S. Squires, D. Marchette, and J.L. Buckley. 1984. Synopsis of biological data on shortnose sturgeon (*Acipenser brevirostrum*) Lesueur 1818. National Oceanic and Atmospheric Administration Technical Report NMFS 14, National Oceanic and Atmospheric Administration, Washington, D.C., 45pp.
- Linweave, Inc: 1988. Application for minor license for the Gill Mill, D Wheel, Hydroe-

lectric Project, FERC Project No. 2775, Massachusetts. November 25, 1988.

1989a. Supplement to the application for minor license for the Gill Mill, D Wheel, Hydroelectric Project, FERC Project No. 2775, Massachusetts. February 21, 1989.

1989b. Additional information for the application for minor license for the Gill Mill, D Wheel, Hydroelectric Project, FERC Project No. 2775, Massachusetts. March 20, 1989.

Northeast Utilities Service Company. 1984. Review of cancelled Atlantic salmon smolt (Salmo salar), radiotelemetry study at the Holyoke dam, Massachusetts. Hartford, Connecticut. September 1984.

Federal Energy Regulatory Commission. 1983. Planning status report for the Connecticut River Basin. Washington, DC. August 1983.

1986. Environmental assessment for the Connecticut River Basin. Washington, DC. November 7, 1986.

1988a. Order amending license for the Hadley Falls Project, FERC Project No. 2004, Massachusetts. February 26, 1988 [42 FERC ¶ 62,166].

1988b. Environmental assessment for the Number 2 Hydro Unit, FERC Project No. 2387, Holyoke, Massachusetts. August 26, 1988.

Taubert, B.D. 1980. Biology of shortnose sturgeon (*Acipenser brevirostrum*) in the Holyoke Pool, Connecticut River, Massachusetts. Ph.D. Thesis. University of Massachusetts, Amherst, 136 pp.

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Safety and Design Assessment

Gill Mill (D Wheel) Hydroelectric Project

FERC Project No. 2775-001, MA

Project Safety

The applicant for the Gill Mill (D Wheel) Project is Linweave, Inc., a manufacturer of paper products. No dam or spillway is included in the project works. All water is delivered to the project via the Holyoke Second Level Canal, which is owned and operated by the Holyoke Water Power Company (HWP).

The New York Regional Office (NYRO), in an Operation Inspection Report dated October

10, 1986, indicated that the existing project had no downstream hazard potential. Since there is no dam, the staff concludes that there are no dam safety problems.

Project Design

The existing project works consist of: (1) a gated intake with submerged trashracks located on the Second Level Canal of the HWP; (2) a 295-foot-long, 12-foot-diameter steel penstock; (3) a single runner, Francis turbine directly coupled to a 450-kilowatt (kW) Westinghouse generator; (4) two 125-foot-long, 7-foot-wide by 10-foot-high arched, brick-lined tailrace tunnels; (5) a concrete gated outlet structure where the tailwater empties into a channel that leads to the Connecticut River; and (6) appurtenant facilities. The 310-foot-long by 325-foot-wide Gill Mill building which houses the generating equipment is not considered part of the project works.

The primary transmission lines to be included in a new license for Project No. 2775 can be described as a 660-foot run of three-phase, 0.6-kilovolt (kV) overhead line extending from the 0.6-kV terminals of the project generator to the 0.6-kV terminals of the Mt. Tom step-up transformer; and a 90-foot run of three-phase, 13.8-kV overhead line extending from the 13.8-kV terminals of the Mt. Tom step-up transformer bank to the 13.8-kV substation owned by the Holyoke Water Power Company (HWP).

In addition to the primary lines, the new license should include the single-runner Francis turbine, the 450-kilowatt (kW) Westinghouse generator, all necessary switchgear, all installed electrical protection and control apparatus, and all instrumentation. No step-up transformer is included since Project No. 2775 shares the kilovoltampere (kVA) capacity of the Mt. Tom step-up transformer bank.

The applicant has proposed no new construction or improvements for the existing project; therefore, the project license does not need to include any special engineering articles.

The NYRO October 1986 Operation Inspection Report cited no deficiencies in project safety or operation. There is no dam within the project boundaries.

The staff concludes that the project would be safe and adequate if operated in conformance with the terms of a new license.

Water Resource Planning

The project works would contain one 450-kW generator directly connected to a Francis turbine. The gross head at the site ranges from 24 to 32 feet depending upon the tailwater elevation and the average head is 30 feet. The design head of the turbine is 32 feet and its

hydraulic capacity is estimated to be 161 cubic feet per second (cfs). The applicant indicated that the project generated 1,790 megawatt-hours (MWh) annually. The staff finds that the plant factor would be 45 percent. The project would continue to be operated manually in a run-of-river mode.

All water to the project is delivered via the Second Level Canal. The Second Level Canal is one of a series of three canals (First Level Canal, Second Level Canal, and Third Level Canal) that receives water from the Hadley Falls Project (FERC Project No. 2004) on the Connecticut River. The HWP owns and operates the Hadley Falls Project and its canal system, which delivers water to various manufacturing and other business concerns for process purposes and power generation. The applicant for the Gill Mill (D Wheel) Project is Linweave, Inc.

The water for power generation is allocated in the form of mill powers (mp) to owners of lands adjacent to the canal system, under indentures or contracts between the individual property owners and the HWP.

These "mp" quantities vary according to water flow in the Connecticut River and fall into the following three categories:

Permanent power - the amount of water sold to Linweave whenever the average daily river flows in the Connecticut River are equal to or greater than 3,100 cfs.

Surplus power - water offered for sale to owners of the so-called permanent power rights whenever average river flows in the Connecticut River are equal to or greater than 3,600 cfs.

Non-permanent power - water which is not guaranteed, but which would be furnished when there is more than a sufficient quantity of water in the river to supply all the permanent power owners together with 50 percent of it as surplus. Water would be supplied 6 days a week (but not on Sundays or holidays) when the river flows are equal to or greater than 3,865 cfs. Sunday and holiday operation is allowed when the average river flows exceed approximately 4,300 cfs.

Under the allocation terms of the indentures, Linweave is entitled, in perpetuity, to draw a carefully prescribed quantity of water from the HWP canal system for power generation and discharge it into the Connecticut River below the project. Linweave is also entitled to purchase and use such surplus water as the HWP makes available from time to time.

The Gill Mill (D Wheel) Project is authorized one type of water allocation rights based on the indentures: non-permanent. For non-permanent power allocations, the Gill Mill (D Wheel)

Project is authorized to withdraw 5.2 mp or 150 cfs. Based on the staff's flow duration curve for the Connecticut River, the applicant can withdraw 150 cfs about 87 percent of the time. Whenever the flows in the Connecticut River exceed 15,000 cfs, the applicant can withdraw the maximum hydraulic capacity of the turbine unit, which is 161 cfs, from the Second Level Canal. The staff estimates that this could occur about 31 percent of the time.

The applicant has estimated that the project operates at its maximum capacity (161 cfs) about 26 percent of the time, and at its non-permanent allocation (150 cfs) about 58 percent of the time. Based on the applicant's estimates, the project would be shut down 16 percent of the time. The NYRO 1986 Operation Inspection Report indicated that the canal system is shut down 3 times a year: once in April, once in July, and once in October. During those periods, the canal system is drained, inspected, and repaired if needed. The repairs are generally scheduled for the July shutdown.

There are certain periods of the year when the project cannot operate and the applicant is directed by the HWP to discontinue drawing water from the canal system. These periods include: (1) periods when the canal system is dewatered for inspection and maintenance; (2) periods of low flow in the Connecticut River when a public authority has required that the low flows be released at the Hadley Falls Project rather than through the canals according to the indentures, without generating power; and (3) periods when a public authority requires that the waters of the Connecticut River flow through the HWP's hydroelectric generating facilities at the Hadley Falls Project rather than through the canal system according to the indentures. During the latter periods when the HWP generates power at the Hadley Falls Project rather than releases water through the canal system, the applicant is entitled to compensation in kilowatt-hours (in lieu of water) under the terms of the Water Use Agreement (or Economic Dispatch Agreement). In 1987, the compensation provided under the Economic Dispatch Agreement amounted to 1,545 MWh for the eight projects owned by the applicant.

The staff's independent analysis shows that the applicant makes reasonable use of its allocated water. Because of the water allocation limits of the HWP, the applicant cannot develop additional potential at the site. Hence, the staff concludes that the applicant has properly developed the head and hydraulic potential of the site.

The August 1983 Planning Status Report for the Connecticut River Basin lists 19 existing hydroelectric projects, including the Gill Mill

(D Wheel) Project, which are located on the canal system owned by HWP. The applicant owns eight of these projects. The report also listed the Holyoke Project on the canal system as a potential project with an installed capacity of 1,222 MW and an annual generation of 13,165 MWh. The report did not indicate any proposed project on the canal system that would be in conflict with the Gill Mill (D Wheel) Project.

The staff's review of the state and federal agency comments and of seven comprehensive resource development plans identified no plans with which the existing project would be in conflict within this reach of the Second Level Canal. The staff presently has no specific comments or recommendations from reviewing agencies addressing flood control, navigation, or water supply requirements for the Second Level Canal. No competing applications for the project are currently pending before the Commission.

The City of Holyoke, Massachusetts Gas and Electric Department, and the HWP filed petitions to intervene in the licensing proceeding. Neither party opposes the issuance of a license, but each want to protect its interests. The HWP submitted a series of technical comments correcting certain information in the application. None of the corrections affect this report.

The generation from this project is equivalent to generation produced from burning 2,940 barrels of oil or 830 tons of coal annually in a steam-electric plant.

In summary, the staff's analysis shows that the existing project is properly designed to develop the hydropower potential of the site.

Economic Evaluation

The proposed project would be economically beneficial, so long as the projected levelized

cost is less than the levelized cost of alternative energy and capacity.

In the case of the Gill Mill (D Wheel) Project, the applicant has proposed no new construction. Hence, the levelized project costs would be the operation and maintenance costs and administrative and general costs. These costs are small compared to the value of the power.

The applicant currently sells the project power to Fitchburg Gas & Electric Light Company, pursuant to a power sales agreement dated March 25, 1982, and it would continue to do so.

The staff concludes that the existing project is economically beneficial.

Exhibits

The staff concludes that the following parts of exhibit A and the following exhibit F drawings conform to the Commission's rules and regulations. The staff therefore includes these in the license:

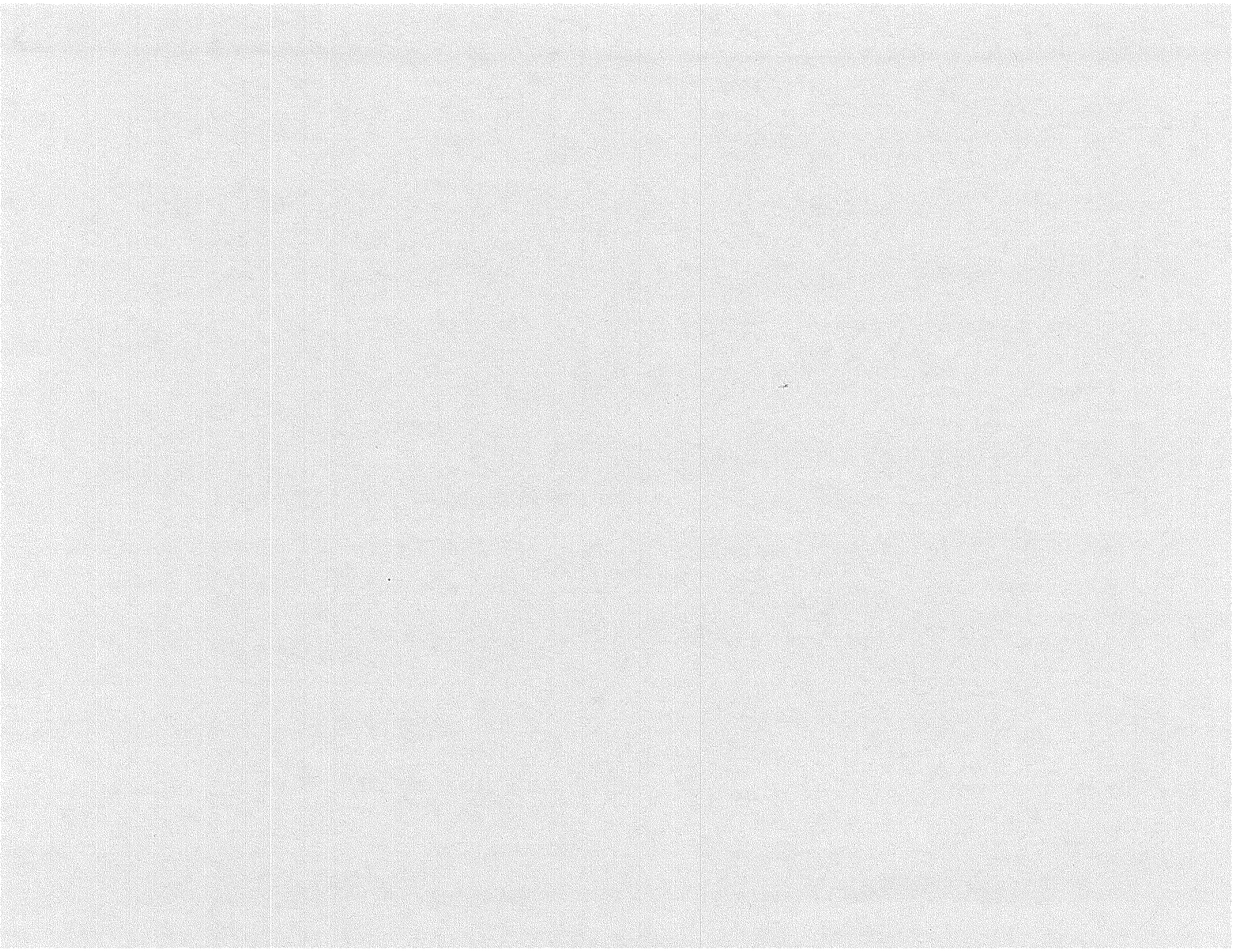
Exhibit A - The following sections of exhibit A filed November 25, 1988:

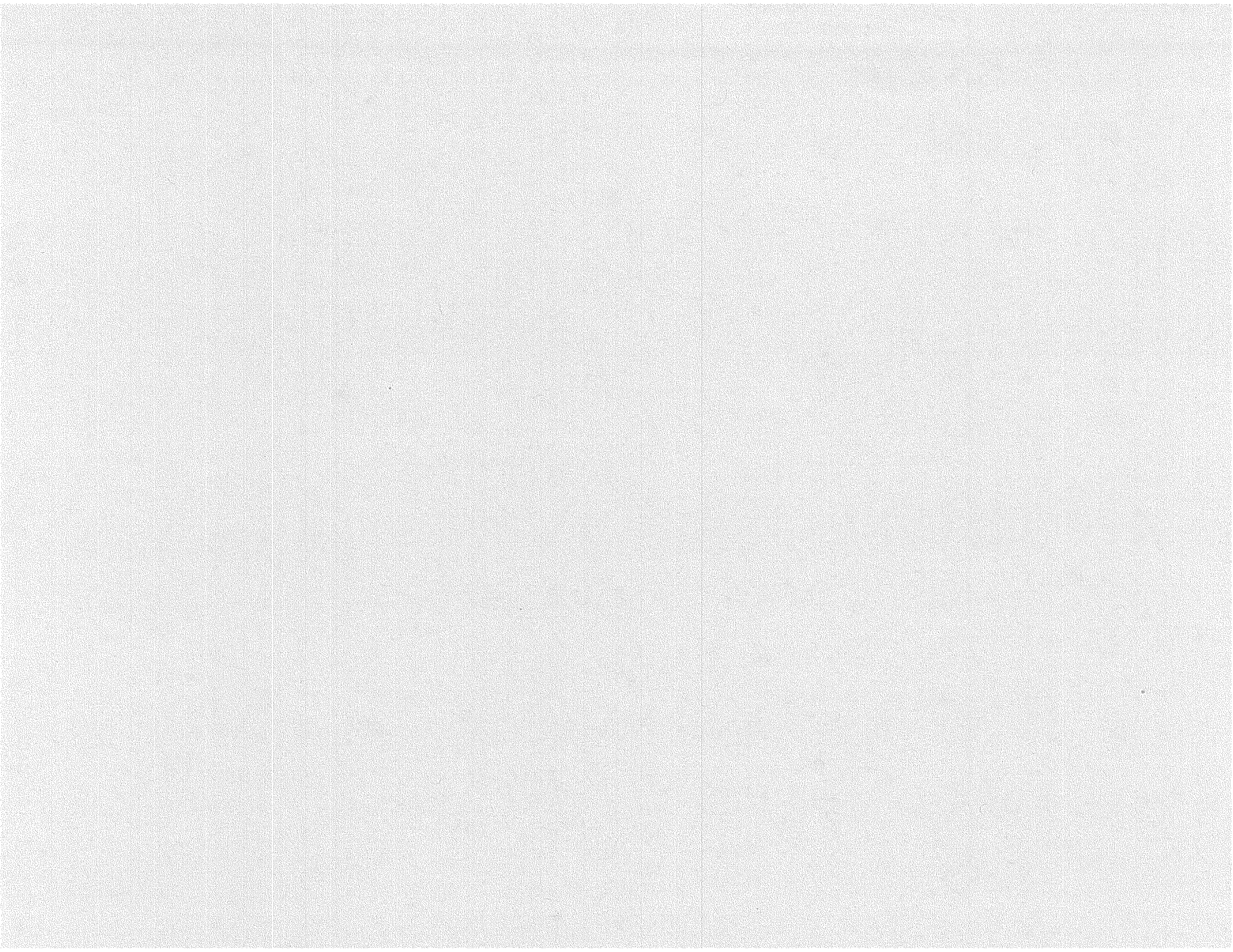
The turbine and generator description on page A-2; the transmission line description on pages A-2 and A-3, as corrected by letter dated April 10, 1989; and the additional mechanical and electrical equipment description on pages A-1 through A-7.

<i>Exhibit</i>	<i>FERC No.</i>	<i>Showing</i>
F-1	2775-3	Site Plan
F-2	2775-4	Powerhouse Plan and Elevation

Preparers

Ronald E. Spath, Civil Engineer
C. Frank Miller, Electrical Engineer





[¶ 62,297]

Linweave, Inc., Project No. 2775-001 - Massachusetts

Order Issuing New License (Minor Project)

(Issued June 29, 1989)

Fred E. Springer, Director, Office of Hydropower Licensing.

Linweave, Inc. has filed a license application under Part I of the Federal Power Act (Act) to continue to operate and maintain the Gill Mill (D Wheel) Project, located on the Holyoke Canal, in Hampden County, Massachusetts. The hydroelectric facilities located along the Holyoke Canal system affect navigable waters of the United States.¹ The license for the project, which was issued on July 19, 1977 [59 FPC 736], with an effective date of March 1, 1941, expires on February 28, 1991. The existing license waived section 15 of the Act only as it relates to federal takeover.

Notice of the application has been published. No protests were filed in this proceeding, and

no agency objected to issuance of this license. Comments received from interested agencies and individuals have been fully considered in determining whether to issue this license. Motions to intervene were filed by the City of Holyoke Gas & Electric Department and the Holyoke Water Power Company (HWP) in order to be parties in this proceeding. HWP also requests that any license issued which utilizes HWP's Holyoke Canal System water be conditioned, as was the previous license, to require cooperation with HWP as the licensee for the Hadley Falls Project No. 2004. Article 202 is included to provide for appropriate cooperation.

¹ See 33 FPC 593, 594 (1965).

Comprehensive Development

Sections 4(e) and 10(a)(1) of the Act require the Commission to consider and balance in the public interest all uses of the waterway on which a project is proposed to be located.

The Gill Mill (D Wheel) Project has operated under the terms of its existing license since 1977. In the environmental assessment (EA), the staff analyzed the environmental effects of the continued operation of the project. Neither the resource agencies nor staff identified any significant conflicts between continued operation of the project as proposed by the applicant, and the environmental values of the project area.

Three alternatives to relicensing the Gill Mill (D Wheel) Project were also considered by the staff in its EA. They include: (1) issuance of an annual license; (2) issuance of a non-power license; and (3) denial of a license application. No alternative was identified that would have a higher or better use of the project in terms of providing power and environmental benefits without significant environmental cost.

Section 10(a)(2) of the Act also requires the Commission to consider the extent to which a proposed project is consistent with an existing federal, state, or local comprehensive plan. Under section 10(a)(2), federal, and state agencies filed seven comprehensive plans that address resources in Massachusetts. Of these plans, staff identified and reviewed four plans relevant to this project.² No conflicts between the proposed Gill Mill (D Wheel) Project and these four plans were found.

Therefore, the project as conditioned is determined to be best adapted to a comprehensive plan, pursuant to Section 10(a) of the Act, for improving a waterway and would provide for adequate protection, mitigation, and enhancement of fish and wildlife pursuant to Section 10(j) of the Act.

Recommendations of Federal and State Fish and Wildlife Agencies

Section 10(j) of the Act requires the Commission to include license conditions, based on recommendations of federal and state fish and wildlife agencies, for the protection, mitigation, and enhancement of fish and wildlife. The environmental assessment for the Gill Mill (D Wheel) Project addresses the concerns of the federal and state fish and wildlife agencies;

however, recommendations are not needed for continued operation of the project.

ECPA Findings

Section 10(a)(2)(C) and section 15(a) of the Federal Power Act, as amended by the Electric Consumers Protection Act of 1986 (ECPA), requires the Commission to consider in writing the following factors in issuing new licenses.

The following discussions apply individually and collectively to the eight hydro projects owned and operated by Linweave, Inc. The eight projects are identified by FERC project numbers: 2497, 2758, 2766, 2768, 2770, 2771, 2772, and 2775.

Consumption Efficiency Improvement Programs (Section 10(a)(2)(C))

Since the applicant's primary business is the manufacture of paper products and not the generation or sale of electric power, no discussion of on-going or planned conservation and load-management programs is required in this document.

The Plans and Abilities of the Applicant to Comply with the Articles, Terms, and Conditions of Any License Issued to it and Other Applicable Provisions of Part I of the Act (Section 15(a)(2)(A))

The staff has reviewed the plans of the applicant to comply with the articles, terms, and conditions of any license issued to Linweave, Inc.

A review of the compliance record of the applicant indicates that the applicant's compliance with the terms and conditions of its current license has been satisfactory. The staff concludes that the applicant has demonstrated its ability to comply in a good faith manner with all articles, terms, and conditions of the license, and the staff concludes that the applicant would perform in a competent manner if issued a new license for the project.

The Plans of the Applicant to Manage, Operate, and Maintain the Project Safely (Section 15(a)(2)(B))

The staff has reviewed the applicant's plans to manage, operate, and maintain the project safely. There is no dam within the project boundaries to operate and maintain.

² Connecticut River 1982 Water Quality Management Plan, June 1983, Massachusetts Division of Water Pollution Control; Connecticut River Basin Fish Passage, Flow, and Habitat Alteration Considerations in Relation to Anadromous Fish Restoration, October 1981, Technical Committee for Fisheries Management of the Connecticut River; The Outdoor

Heritage of Massachusetts, SCORP 1983-1988, December 1983, Massachusetts Department of Environmental Management; A Strategic Plan for the Restoration of Atlantic Salmon to the Connecticut River Basin, September 1982, Policy Committee for Fisheries Management of the Connecticut River.

The eight projects draw carefully prescribed quantities of water from the Second Level Canal and discharge it to the Connecticut River below the projects. There is a flood wall located between the eight projects and the Connecticut River that ensures protection during flood conditions. When the river elevations reach 62 feet or higher, the eight projects are shut down and the headgates and tailrace gates are closed. The City of Holyoke Department of Public Works is responsible for implementing the flood wall operation schedule and closing the tailrace gates of the eight projects.

The applicant has operated the eight projects with a perfect employee safety and public safety record. There have been no deaths or lost-time injuries to employees from project operations, nor is there any record of injury or death to the public within the project boundaries.

Based upon a review of the available information on the project safety plans, the staff concludes that the applicant is capable of managing, operating, and maintaining the project in a safe manner.

The Plans and Abilities of the Applicant to Operate and Maintain the Project in a Manner Most Likely to Provide Efficient and Reliable Electric Service (Section 15(a)(2)(C))

The staff has reviewed the operation inspection reports by the NYRO and the applicant's project operation reports.

The applicant has full time employees in its engineering department that monitor the eight projects, including physically checking each unit several times daily. Additionally, the projects have automatic safety devices to shut down the units in case of abnormal operating conditions.

The applicant cleans the trashracks and lubricates the mechanical machinery regularly. The applicant provides for periodic inspection of the penstock and provides maintenance when needed.

The applicant has reported a total of seven unscheduled outages for the eight projects over the last five years. The outages ranged in length from 48 days to 114 days during which time the equipment was repaired. The applicant has rebuilt and/or overhauled seven of the generating units since February 1979 when the applicant purchased the eight projects.

The applicant has no plans to increase generation at the eight projects. The main reason for this is that the applicant is entitled to withdraw only a carefully prescribed quantity of water from the Second Level Canal under the terms of certain indenture agreements with HWP.

The applicant is in the paper-products manufacturing business, which is a highly competitive field and is very energy-intensive. Because of the competition in the paper-products market, the applicant must operate the project in the most efficient and reliable manner to maximize electric power sales revenues available to offset power purchases for use in its paper manufacturing operations.

The staff concludes that the project is being operated in an efficient and reliable manner.

The Need of the Applicant Over the Short and Long Terms for the Electricity Produced by the Project to Serve Its Customers (Section 15(a)(2)(D))

The applicant, Linweave, Inc., is a manufacturer of paper products and, as such, does not sell any of the electrical output of the eight hydroelectric projects (which it owns and operates as the current licensee) to end-use customers. Therefore, this document does not address the applicant's need for the electricity generated by the eight projects to serve its customers. The paper-products manufacturing business is today a highly competitive industry. Production costs in this industry are very energy intensive, due to the large amounts of electric energy used for the manufacture of paper. When deprived of a low-cost source (or sources) of electric energy, a paper manufacturer cannot survive in the market place for paper products.

All eight of the hydropower projects for which the applicant is applying for new licenses are operated in the run-of-the-river mode; and, as a result, the capacity and energy produced by them depend upon the available streamflow provided by the Second Level Canal of the Holyoke Water Power Company. This flow is subject to seasonal and yearly variations. The applicant's electric power demands at the several paper mills are determined by factors which are in no way correlated with water flow in the canal system. Because of this, and for other reasons affecting the applicant's paper-making electrical energy costs, Linweave has found it to be economically advantageous to sell the output of the eight projects to a local electric utility and purchase the power required by the Linweave paper mills.

The total net electrical output from all eight of the projects is currently being sold, and is expected to continue to be sold to Fitchburg Gas and Electric Light Company, pursuant to a power sales agreement dated March 25, 1982.

The applicant's present and future need for the electric power produced by the eight hydro projects, with which this document is concerned, can be stated in few words: revenues

received from the sale of project capacity and energy are used to offset the cost of capacity and energy purchased on an "as-needed, total requirements" purchase agreement with a local utility, thus improving Linweave's competitive position in the paper products marketplace, which may prove necessary for industrial survival.

The total installed capacity of the eight hydro projects is 3.362 megawatts, and the applicant estimates that the projects are capable of producing an average of 16,997 megawatt-hours of energy annually.

The staff concludes that there is a need for the project power over the short and the long term.

The Existing and Planned Transmission Services of the Applicant (Section 15(a)(2)(E))

If the applicant is issued new licenses for the eight hydro projects listed above, no changes of the existing transmission system, its operation, or operating characteristics would occur as a result thereof, and none are planned.

If new licenses are denied, the transmission system, or systems associated with the eight projects, would no longer be required, since the applicant would no longer generate power to sell. The applicant would continue to purchase "all requirements" power required for the operation of the paper mills from a local utility. Transmission would not be affected by denial of the licenses.

The staff concludes that the transmission services are adequate as they currently exist.

Whether the Plans of the Applicant will be Achieved, to the Greatest Extent Possible, in a Cost Effective Manner (Section 15(a)(2)(F))

The Gill Mill was constructed in 1880 and the present hydroelectric generating unit rebuilt in 1983. No new construction is proposed. The annual cost of operating the project would be its annual operation and maintenance costs. Continued future project operation would serve to provide an economically efficient source of energy for Linweave, Inc. The staff concludes that the project is economically beneficial.

The Applicant's Record of Compliance with the Terms and Conditions of the Existing License (Section 15(a)(3))

The compliance records of Linweave, Inc., with the terms and conditions of its existing licenses, are satisfactory. Further, the licensee has maintained the projects in a satisfactory manner.

The licensee is reminded that failure to comply with the terms and conditions of this license will subject it to the enforcement and penalty provisions of section 31 of the Federal Power Act.

Term of License

Section 15 of the Act, as amended by ECPA specifies that any license issued under section 15 shall be for a term which the Commission determines to be in the public interest, but not less than 30 years, nor more than 50 years from the date the license is issued. This provision is similar to pre-ECPA Commission policy, which was to establish from the expiration date of the existing license, 30-year terms for those projects which proposed no new construction or capacity, 40-year terms for those projects that proposed a moderate amount of new development, and 50-year terms for those projects that proposed a substantial amount of new development.³

Linweave, Inc. proposes no modifications to the existing project facilities or change in operation of the project. However, the existing license will not expire until February 28, 1991. Accordingly, the new license for the project will be for a term of 30 years from the expiration of the existing license.

Summary of Findings

An EA was issued for this project. Background information, analysis of impacts, support for related license articles, and the basis for a finding of no significant impact on the environment are contained in the EA attached to this order. Issuance of this license is not a major federal action significantly affecting the quality of the human environment.

The design of this project is consistent with the engineering standards governing dam safety. The project will be safe if operated and maintained in accordance with the requirements of this license. Analysis of related issues is provided in the Safety and Design Assessment attached to this order.

The Director, Office of Hydropower Licensing, concludes that the project would not conflict with any planned or authorized development, and would be best adapted to comprehensive development of the waterway for beneficial public uses.

The Director orders:

(A) This license is issued to Linweave, Inc. (licensee), for a period of 30 years, effective March 1, 1991, to operate and maintain the Gill Mill (D Wheel) Project. This license is

³ See *Montana Power Company*, 56 FPC 2008 (1976).

subject to the terms and conditions of the Act, which is incorporated by reference as part of this license, and subject to the regulations the Commission issues under the provisions of the Act.

(B) The project consists of:

(1) All lands, to the extent of the licensee's interests in those lands, shown by exhibit G:

<i>Exhibit</i>	<i>FERC No.</i>	<i>Showing</i>
G-1	2775-3	Project Location

(2) Project works consisting of: (a) a gated intake with submerged trashracks located on the second level canal of the Holyoke Water Power Company; (b) a 12-foot-diameter penstock 295 feet long; (c) a 450-kW generating unit located within the Gill Mill building; (d) two parallel 7-foot-wide by 10-foot-high arched brick-lined tailrace tunnels extending from the draft tube to an existing outlet structure; (e) a concrete gated outlet structure where tailwater empties into a channel that leads to the Connecticut River; (f) a 13.8-kV transmission line 660 feet long that connects the project to an existing transmission line; and (g) appurtenant facilities.

The project works generally described above are more specifically shown and described by those portions of exhibits A and F recommended for approval in the attached Safety and Design Assessment.

(3) All of the structures, fixtures, equipment or facilities used to operate or maintain the project, all portable property that may be employed in connection with the project and all riparian or other rights that are necessary or appropriate in the operation or maintenance of the project.

(C) The exhibit G described above and those sections of exhibits A and F recommended for approval in the attached Safety and Design Assessment are approved and made part of the license.

(D) The following sections of the Act are waived and excluded from the license for this minor project:

4(b), except the second sentence; 4(e), insofar as it relates to approval of plans by the Chief of Engineers and the Secretary of the Army; 6, insofar as it relates to public notice and to the acceptance and expression in the license of terms and conditions of the Act that are waived here; 10(c), insofar as it relates to depreciation reserves; 10(d); 10(f); 14, except insofar as the power of condemnation is reserved; 15; 16; 19; 20; and 22.

(E) This license is subject to the articles set forth in Form L-9 (October 1975) [reported at 54 FPC 1852], entitled "Terms and Conditions of License for Constructed Minor Project

Affecting Navigable Waters of the United States", and the following additional articles:

Article 201. The licensee shall pay the United States the following annual charge, effective March 1, 1991:

For the purpose of reimbursing the United States for the cost of administration of Part I of the Act, a reasonable amount as determined in accordance with the provisions of the Commission's regulations in effect from time to time. The authorized installed capacity for that purpose is 600 horsepower.

Article 202. The Licensee shall cooperate with the licensee for Project No. 2004 in order that the conditions of Article 16 of the license for Project No. 2004 can be fulfilled.

Article 401. Authority is reserved to the Commission to require the licensee to construct, operate, and maintain, or provide for the construction, operation, and maintenance of such fishways, as may be prescribed by the Secretary of the Interior pursuant to section 18 of the Federal Power Act.

Article 402. (a) In accordance with the provisions of this article, the licensee shall have the authority to grant permission for certain types of use and occupancy of project lands and waters and to convey certain interests in project lands and waters for certain types of use and occupancy, without prior Commission approval. The licensee may exercise the authority only if the proposed use and occupancy is consistent with the purposes of protecting and enhancing the scenic, recreational, and other environmental values of the project. For those purposes, the licensee shall also have continuing responsibility to supervise and control the use and occupancies for which it grants permission, and to monitor the use of, and ensure compliance with the covenants of the instrument of conveyance for, any interests that it has conveyed, under this article. If a permitted use and occupancy violates any condition of this article or any other condition imposed by the licensee for protection and enhancement of the project's scenic, recreational, or other environmental values, or if a covenant of a conveyance made under the authority of this article is violated, the licensee shall take any lawful action necessary to correct the violation. For a permitted use or occupancy, that action includes, if necessary, cancelling the permission to use and occupy the project lands and waters and requiring the removal of any non-complying structures and facilities.

(b) The type of use and occupancy of project lands and water for which the licensee may grant permission without prior Commission approval are: (1) landscape plantings; (2) non-commercial piers, landings, boat docks, or similar structures and facilities that can accommo-

date no more than 10 watercraft at a time and where said facility is intended to serve single-family type dwellings; and (3) embankments, bulkheads, retaining walls, or similar structures for erosion control to protect the existing shoreline. To the extent feasible and desirable to protect and enhance the project's scenic, recreational, and other environmental values, the licensee shall require multiple use and occupancy of facilities for access to project lands or waters. The licensee shall also ensure, to the satisfaction of the Commission's authorized representative, that the use and occupancies for which it grants permission are maintained in good repair and comply with applicable state and local health and safety requirements. Before granting permission for construction of bulkheads or retaining walls, the licensee shall: (1) inspect the site of the proposed construction, (2) consider whether the planting of vegetation or the use of riprap would be adequate to control erosion at the site, and (3) determine that the proposed construction is needed and would not change the basic contour of the reservoir shoreline. To implement this paragraph (b), the licensee may, among other things, establish a program for issuing permits for the specified types of use and occupancy of project lands and waters, which may be subject to the payment of a reasonable fee to cover the licensee's costs of administering the permit program. The Commission reserves the right to require the licensee to file a description of its standards, guidelines, and procedures for implementing this paragraph (b) and to require modification of those standards, guidelines, or procedures.

(c) The licensee may convey easements or rights-of-way across, or leases of, project lands for: (1) replacement, expansion, realignment, or maintenance of bridges and roads for which all necessary state and federal approvals have been obtained; (2) storm drains and water mains; (3) sewers that do not discharge into project waters; (4) minor access roads; (5) telephone, gas, and electric utility distribution lines; (6) non-project overhead electric transmission lines that do not require erection of support structures within the project boundary; (7) submarine, overhead, or underground major telephone distribution cables or major electric distribution lines (69-kV or less); and (8) water intake or pumping facilities that do not extract more than one million gallons per day from a project reservoir. No later than January 31 of each year, the licensee shall file three copies of a report briefly describing for each conveyance made under this paragraph (c) during the prior calendar year, the type of interest conveyed, the location of the lands subject to the conveyance, and the nature of the use for which the interest was conveyed.

(d) The licensee may convey fee title to, easements or rights-of-way across, or leases of project lands for: (1) construction of new bridges or roads for which all necessary state and federal approvals have been obtained; (2) sewer or effluent lines that discharge into project waters, for which all necessary federal and state water quality certification or permits have been obtained; (3) other pipelines that cross project lands or waters but do not discharge into project waters; (4) non-project overhead electric transmission lines that require erection of support structures within the project boundary, for which all necessary federal and state approvals have been obtained; (5) private or public marinas that can accommodate no more than 10 watercraft at a time and are located at least one-half mile from any other private or public marina; (6) recreational development consistent with an approved Exhibit R or approved report on recreational resources of an Exhibit E; and (7) other uses, if: (i) the amount of land conveyed for a particular use is five acres or less; (ii) all of the land conveyed is located at least 75 feet, measured horizontally, from the edge of the project reservoir at normal maximum surface elevation; and (iii) no more than 50 total acres of project lands for each project development are conveyed under this clause (d)(7) in any calendar year. At least 45 days before conveying any interest in project lands under this paragraph (d), the licensee must submit a letter to the Director, Office of Hydropower Licensing, stating its intent to convey the interest and briefly describing the type of interest and location of the lands to be conveyed (a marked exhibit G or K map may be used), the nature of the proposed use, the identity of any federal or state agency official consulted, and any federal or state approvals required for the proposed use. Unless the Director, within 45 days from the filing date, requires the licensee to file an application for prior approval, the licensee may convey the intended interest at the end of that period.

(e) The following additional conditions apply to any intended conveyance under paragraph (c) or (d) of this article:

(1) Before conveying the interest, the licensee shall consult with federal and state fish and wildlife or recreation agencies, as appropriate, and the State Historic Preservation Officer.

(2) Before conveying the interest, the licensee shall determine that the proposed use of the lands to be conveyed is not inconsistent with any approved exhibit R or approved report on recreational resources of an exhibit E; or, if the project does not have an approved exhibit R or approved report on recreational resources, that

the lands to be conveyed do not have recreational value.

(3) The instrument of conveyance must include covenants running with the land adequate to ensure that: (i) the use of the lands conveyed shall not endanger health, create a nuisance, or otherwise be incompatible with overall project recreational use; and (ii) the grantee shall take all reasonable precautions to insure that the construction, operation, and maintenance of structures or facilities on the conveyed lands will occur in a manner that will protect the scenic, recreational, and environmental values of the project.

(4) The Commission reserves the right to require the licensee to take reasonable remedial action to correct any violation of the terms and conditions of this article, for the protection and enhancement of the project's scenic, recreational, and other environmental values.

(f) The conveyance of an interest in project lands under this article does not in itself change the project boundaries. The project boundaries may be changed to exclude land conveyed under this article only upon approval of revised exhibit G or K drawings (project boundary maps) reflecting exclusion of that land. Lands conveyed under this article will be excluded from the project only upon a determination that the lands are not necessary for project purposes, such as operation and maintenance, flowage, recreation, public access, protection of environmental resources, and shoreline control, including shoreline aesthetic values. Absent extraordinary circumstances, proposals to exclude lands conveyed under this article from the project shall be consolidated for consideration when revised exhibit G or K drawings would be filed for approval for other purposes.

(g) The authority granted to the licensee under this article shall not apply to any part of the public lands and reservations of the United States included within the project boundary.

(F) The licensee shall serve copies of any Commission filing required by this order on any entity specified in this order to be consulted on matters related to that filing. Proof of service on these entities must accompany the filing with the Commission.

(G) This order is issued under authority delegated to the Director and is final unless appealed to the Commission by any party within 30 days from the issuance date of this order. Filing an appeal does not stay the effective date of this order or any date specified in

this order. The licensee's failure to appeal this order shall constitute acceptance of the license.

Environmental Assessment¹

Federal Energy Regulatory Commission
Office of Hydropower Licensing
Division of Project Review

Date: June 16, 1989

Project name: Gill Mill, D Wheel, Hydroelectric Project

FERC Project No. 2775-001

A. Application

1. Application type: New minor license
2. Date filed with the Commission: November 25, 1988
3. Applicant: Linweave, Inc.
4. Water body: Holyoke Canal; River basin: Connecticut
5. Nearest city or town: Holyoke (See figure 1.)
6. County: Hampden; State: Massachusetts

B. Purpose and Need for Action

1. Purpose.

Linweave estimates the average annual energy generation of the Gill Mill, D Wheel, Hydroelectric Project is 1,790 megawatt-hours. Project power is sold to the Fitchburg Gas and Electric Light Company.

2. Need for power.

The power from the project is useful in meeting a small part of the need for power projected for the New England Power Pool area of the Northeast Power Coordinating Council (NPCC) region. Power generated at the project displaces fossil-fueled power generation in the NPCC region, thus conserving nonrenewable fossil fuels and reducing the emission of noxious byproducts caused by the combustion of fossil fuels.

C. Proposed Project and Alternatives

1. Description of the proposed action. (See figure 2.)

The existing operating project was issued an initial license in 1977, which will expire in 1991. The licensee has filed for a new license for the continued operation of the project. The existing operating project consists of: (i) a gated intake with submerged trashracks located on the second level canal of the Holyoke Water Power Company; (ii) a 12-foot-

¹ Figures and attachments referenced in the text are omitted from this document due to reproduction requirements.

diameter penstock 295 feet long; (iii) an existing 450-kW generating unit located within the Gill Mill building; (iv) two parallel 7-foot-wide by 10-foot-high arched brick-lined tailrace tunnels extending from the draft tube to an existing outlet structure; (v) a concrete gated outlet structure where tailwater empties into a channel that leads to the Connecticut River; (vi) a 13.8-kV transmission line 660 feet long that connects the project to an existing transmission line; and (vii) appurtenant facilities. The project operates in a run-of-river mode. Linweave does not propose any construction or change in project operation. The Holyoke Water Power Company controls flows from the Connecticut River into the canal system under a FERC major license granted to Project No. 2004.

2. Applicant's proposed mitigative measures.

Since Linweave proposes to continue operating the project as in the past, with no new construction, no changes to the hydroelectric project, and no changes in the use and release of water, Linweave proposes no mitigative measures.

3. Federal lands affected.

No.

4. Alternatives to the proposed project.

a. *Issuance of an annual license.* Section 15(a) of the Federal Power Act (Act), 16 U.S.C. § 808(a), provides for the issuance of annual licenses to the prior licensee if the license expires pending the relicensing determination. Under this alternative, an annual license would continue to be issued to Linweave until a new license is issued. The annual license contains the same terms as the expired license, thereby maintaining the status quo.

b. *Issuance of a non-power license.* Section 15(f) of the Act, § 808(b), authorizes the Commission to issue a license for nonpower use when the Commission "finds that in conformity with a comprehensive plan for improving or developing a waterway or waterways for beneficial public uses all or part of any licensed project should no longer be used or adapted for use for power purposes." A license that is granted by the Commission for nonpower use is temporary. When the Commission finds that a state, municipality, interstate agency, or another federal agency is authorized and willing to assume regulatory supervision of the lands and facilities included under the nonpower license and does so, the Commission shall thereupon terminate the nonpower license.

c. *Denial of the license application.* Denial of the license application could lead to removal of the power facilities and removal of all project works.

D. Consultation and Compliance

1. Fish and wildlife agency consultation (Fish & Wildlife Coordination Act).

- a. U.S. Fish & Wildlife Service: Yes.
- b. State(s): Yes.
- c. National Marine Fisheries Service: Yes.

2. Section 7 consultation (Endangered Species Act).

- a. Listed species: Present.
- b. Consultation: Not required.

Remarks: The federally listed endangered shortnose sturgeon under the jurisdiction of the National Marine Fisheries Service (NMFS) inhabits the lower segment of the Connecticut River from the river's mouth upstream to the Holyoke dam. A small landlocked population is found in the pool above the Holyoke dam (Taubert, 1980). Dadswell, *et al.* (1984) estimated that between 800 and 1000 shortnose sturgeon inhabit the lower portion (below Holyoke) of the Connecticut River. The NMFS reports that due to the trashrack spacing, any sturgeon which might enter the canal would be prevented from entrainment into the project (personal communication, Chris Mantzaris, staff, National Marine Fisheries Service, Gloucester, Massachusetts, June 13, 1989).

3. Section 401 certification (Clean Water Act).

Required; applicant requested certification on 10/17/88.

Status: Granted by the certifying agency on 03/30/89.

4. Cultural resource consultation (Historic Preservation Act).

- a. State Historic Preservation Officer: Yes.
- b. National Park Service: Yes.
- c. *National Register* status: Eligible or listed.
- d. Council: Not required.
- e. Further consultation: Not required.

Remarks: The project is adjacent to the Holyoke Canal System, a property listed in the *National Register of Historic Places*. Since there would be no redevelopment, new construction, or changes to the exterior of the property, the project would not affect the canal system or any other *National Register* or eligible properties. The SHPO concurs with this finding (letter from Valerie A. Talmage, Executive Director, Massachusetts Historical Commission, and State Historic Preservation Officer, Boston, Massachusetts, December 9, 1988).

5. Recreational consultation (Federal Power Act).

- a. U.S. Owners: No.
- b. National Park Service: Yes.

c. State(s): Yes.

6. Wild and scenic rivers (Wild and Scenic Rivers Act).

Status: None.

7. Land and Water Conservation Fund lands and facilities (Land and Water Conservation Fund Act).

Status: None.

E. Comments

1. The following agencies and entities provided comments on the application or filed a motion to intervene in response to the public notice dated 03/24/89.

<i>Commenting agencies and other entities</i>	<i>Date of letter</i>
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Department of the Army, New England Division Corps of Engineers	05/11/89
Environmental Protection Agency	05/17/89
Department of the Interior	05/19/89
Massachusetts Division of Fisheries and Wildlife	05/30/89

<i>Motions to intervene</i>	<i>Date of motion</i>
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City of Holyoke, Gas and Electric Department	03/28/89
Holyoke Water Power Company	05/24/89

2. The applicant did not respond to the comments or motion(s) to intervene.

F. Affected Environment

1. General description of the locale. (See figure 3.)

a. Description of the Connecticut River Basin.

The Connecticut River Basin, with a drainage area of 11,765 square miles, is the largest river basin in New England. Extending from the northernmost part of New Hampshire to Long Island Sound, the river basin has a maximum length in a north-south direction of about 280 miles and a maximum width of about 62 miles. The total drainage area of the basin is 11,765 square miles. The principal tributaries to the mainstem Connecticut River, by state, are the Passumpsic, White, West, Ottauquechee, and Black Rivers in Vermont; the Ammonoosuc, Mascoma, Ashuelot, and Sugar Rivers in New Hampshire; the Millers, Deerfield, Chicopee, and Westfield Rivers in Massachusetts; and the Farmington River in Connecticut.

This complex of rivers and tributaries constitutes one of the most extensively developed hydropower systems in the U.S. There is now a major effort by federal, state, and private sectors to restore Atlantic salmon to the Connecticut River Basin.

The project is located in a heavily industrialized setting between the second level of the Holyoke Canal system and the Connecticut River. The climate is typical of inland Connecticut and Massachusetts with an average temperature of 49.8 degrees Fahrenheit and an average annual precipitation of 44.39 inches.

b. Licensed and exempted projects.

There are 62 existing licensed projects and 38 exempted projects in the Connecticut River Basin, as of June 1, 1989.

c. Pending applications.

There are 10 pending license applications in the Connecticut River Basin, as of June 1, 1989.

d. Cumulative impacts.

Cumulative impacts are defined as impacts on the environment that result from the incremental impacts of an action when added to other past, present, and reasonably foreseeable future actions regardless which agency or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (40 C.F.R., Part 1508.7).

A target resource is an important resource that may be cumulatively affected by multiple development within a basin. The staff identified Atlantic salmon as the target resource in the Connecticut River Basin (Federal Energy Regulatory Commission, 1986). The selection was based on the regional significance and geographic distribution of this species within the river basin. This anadromous fishery resource is described below in section F(2d). Impacts to Atlantic salmon are discussed in section G.

2. Descriptions of the resources in the project impact area (Source: Linweave, Inc., application, exhibit E, unless otherwise indicated).

a. *Geology and soils*: Bedrock in the project area is interbedded sandstone, shale, conglomerate, and basaltic lava. The glacial till deposits that lie on the glaciated surface of the bedrock are overlain by varied glacial lake deposits. The original dry, sandy, surface soils in the project area have been highly altered by construction of the project and by fill and construction activities associated with urban development of the area.

b. *Streamflow*: Water flow in the canal system is controlled at the canal gatehouse in order to supply necessary water to various hydropower and industrial facilities along the

canal. The amount of flow entering the canal system ranges from no flow, when the gate-house is shut down, to 5,155 cubic feet per second, which is the maximum hydraulic capacity of the canal.

c. *Water quality*: The Connecticut River upstream of Holyoke dam is classified as Class B water by the Massachusetts Division of Water Pollution. Class B water is suitable for primary and secondary contact recreation and fish and wildlife resources. Class B water must have dissolved oxygen (DO) levels greater than 5.0 milligrams per liter (mg/l) and a pH between 6.5 and 8.0. The first level canal is classified as Class C. Class C water is suitable for secondary contact recreation and fish and wildlife resources and must have a DO level greater than 5.0 mg/l and a pH between 6.5 and 9.0 standard units. Water in the project area conforms to the state water quality standards.

d. *Fisheries*:

Anadromous: Present.

Anadromous fish species found in the Connecticut River in the vicinity of the project include American shad, Atlantic salmon, blueback herring, sea lamprey, striped bass, shortnose sturgeon, and American eel (catadromous).

Resident: Present.

Resident fish species found in the Connecticut River in the vicinity of the project include carp, channel catfish, smallmouth bass, largemouth bass, spottail shiner, white perch, bluegill, rainbow trout, and brown trout.

e. *Vegetation*: Dominant vegetative species in the vicinity of the project include oak, maple, white pine, pitch pine, grasses, and ornamental shrubs.

f. *Wildlife*: Undeveloped land in the project area provides habitat for the gray squirrel, eastern cottontail rabbit, raccoon, muskrat, beaver, weasel, pheasant, and small field mammals (mice and voles). The industrial area is inhabited by English sparrows, starlings, robins, mockingbirds, Norway rats, raccoons, and eastern cottontail rabbits.

g. *Cultural*:

There are properties listed on, or eligible for listing on, the *National Register of Historic Places* in the project impact area.

Description: The Holyoke Canal System, a contributing element in the Holyoke Canal Historic District, is listed on the *National Register of Historic Places* and is within the area of the project's potential environmental impact. The portion of the canal in the project area was constructed between 1854 and 1857.

h. *Visual quality*: The project is in an industrial area. Its appearance is consistent with that of the surrounding buildings and structures.

i. *Recreation*: The immediate project area receives no significant recreational use because of its location in a highly industrialized area. No recreational facilities are located at the project. Recreational facilities including playgrounds, swimming pools, and a skating rink are available for use within walking distance of the project. The Connecticut River in the project vicinity is used for boating and fishing.

j. *Land use*: The project is entirely within the city of Holyoke. Land in the project area is primarily used for commercial, industrial, and residential purposes. The canal system is used for generating hydroelectric power at several locations.

k. *Socioeconomics*: The socioeconomic well-being of the area is influenced by industrial and urban development.

G. *Environmental Issues and Proposed Resolutions*

There are 3 issues addressed below.

1. *Cumulative impacts on Atlantic salmon resulting from developing several hydropower projects in the Connecticut River Basin*: The Atlantic salmon is currently a primary target species for a major federal, state, and private sector restoration effort. The goal of the restoration program is to provide and to maintain a sport fishery for Atlantic salmon in the Connecticut River, and to restore and maintain a spawning population in selected tributaries (Federal Energy Regulatory Commission, 1986).

Seaward migrating salmon smolts in the river basin pass numerous hydropower developments where they may become entrained and impinged. The more hydropower facilities outmigrating fish have to pass, the greater the fish losses. Among these hydropower facilities are the Holyoke dam and the canal system.

When river discharges are high and water is flowing over the dam, migrating fish pass downstream with little or no delay (Northeast Utilities Service Company, 1984). On the other hand, outmigrating fish would be entrained into the canal system by high flows entering the canal if they arrive at the dam when flashboards, permitting little or no spillage, are in place. Once in the canal, escape is very difficult. Fish can then be entrained in the turbines of hydropower plants operating along the canal.

On February 26, 1988, the Commission ordered the Holyoke Water Power Company (HWPC) to spill water over Holyoke dam when

salmon smolts are migrating downstream (Federal Energy Regulatory Commission, 1988a). [HWPC is the licensee for the Hadley Falls Project (FERC Project No. 2004) and the entity that controls the dam and the water going into the canal.] Spilling water over the Holyoke dam allows migrating salmon smolts to pass safely downstream in the spill, instead of entering the canal system.

Canal users and the HWPC have since implemented an economic dispatch agreement, in which the HWPC passes all flow downstream at the Holyoke dam and sells the users electricity, instead of water, when salmon smolts are migrating downstream. Linweave participates in this agreement. This arrangement prevents flow from entering the canal and attracting outmigrating Atlantic salmon, and minimizes the number of outmigrating Atlantic salmon trapped in the canal, and the number of project-related impacts to fish in the river basin.

Continuing to operate the Gill Mill, D Wheel, Hydroelectric Project would not contribute to cumulative adverse impacts on Atlantic salmon.

2. *Authority to prescribe fish passage facilities.* The Department of the Interior states that fish passage facilities may be needed at the project in the future, and, by letter of May 24, 1989 they reserve the authority to prescribe such fish facilities. The Commission reserves authority to require the licensee to provide fishways, as may be prescribed by the Secretary of Interior pursuant to section 18 of the Federal Power Act, if the need arises in the future.

3. *Entraining fish in the intake structure.* The Massachusetts Division of Fisheries and Wildlife (DFW) recommended the trashracks at the intake structures have a bar spacing not greater than 1 inch to prevent the entrainment of fish. The project's intake opening includes trashracks with one-inch slot width spacing between bars. The bar spacing at the existing structure satisfies the DFW's recommendation.

H. Environmental Impacts

1. Assessment of impacts expected from the applicant's proposed project (P), with the applicant's proposed mitigation and any conditions set by a federal land management agency; the proposed project with any additional mitigation recommended by the staff (Ps); and any action alternative considered (A).

Assessment symbols indicate the following impact levels:

O = None;	1 = Minor;
2 = Moderate;	3 = Major;
A = Adverse;	B = Beneficial;
L = Long-term;	S = Short term.

Resource	P	Impact Ps	A
a. Geology-Soils	0		
b. Streamflow	0		
c. Water quality:			
Temperature	0		
Dissolved oxygen	0		
Turbidity and sedimentation	0		
d. Fisheries:			
Anadromous	0		
Resident	0		
e. Vegetation	0		
f. Wildlife	0		
g. Cultural:			
Archeological	0		
Historical	0		
h. Visual quality	0		
i. Recreation	0		
j. Land use	0		
k. Socioeconomics	0		

2. Recommended alternative (including proposed, required, and recommended mitigative measures):

Proposed project.

3. Reason(s) for selecting the preferred alternative.

The power generated at this project is produced without any known adverse environmental impacts.

I. Unavoidable Adverse Impacts of the Recommended Alternative

There are no known adverse impacts.

J. Conclusion

Finding of No Significant Impact. Approval of the recommended alternative [H(2)] would not constitute a major federal action significantly affecting the quality of the human environment; therefore, an environmental impact statement (EIS) will not be prepared.

K. Literature Cited

- Dadswell, M.J., B.D. Taubert, T.S. Squires, D. Marchette, and J.L. Buckley. 1984. Synopsis of biological data on shortnose sturgeon (*Acipenser brevirostrum*) Lesueur 1818. National Oceanic and Atmospheric Administration Technical Report NMFS 14, National Oceanic and Atmospheric Administration, Washington, D.C., 45pp.
- Linweave, Inc: 1988. Application for minor license for the Gill Mill, D Wheel, Hydroe-

lectric Project, FERC Project No. 2775, Massachusetts. November 25, 1988.

1989a. Supplement to the application for minor license for the Gill Mill, D Wheel, Hydroelectric Project, FERC Project No. 2775, Massachusetts. February 21, 1989.

1989b. Additional information for the application for minor license for the Gill Mill, D Wheel, Hydroelectric Project, FERC Project No. 2775, Massachusetts. March 20, 1989.

Northeast Utilities Service Company. 1984. Review of cancelled Atlantic salmon smolt (Salmo salar), radiotelemetry study at the Holyoke dam, Massachusetts. Hartford, Connecticut. September 1984.

Federal Energy Regulatory Commission. 1983. Planning status report for the Connecticut River Basin. Washington, DC. August 1983.

1986. Environmental assessment for the Connecticut River Basin. Washington, DC. November 7, 1986.

1988a. Order amending license for the Hadley Falls Project, FERC Project No. 2004, Massachusetts. February 26, 1988 [42 FERC ¶ 62,166].

1988b. Environmental assessment for the Number 2 Hydro Unit, FERC Project No. 2387, Holyoke, Massachusetts. August 26, 1988.

Taubert, B.D. 1980. Biology of shortnose sturgeon (*Acipenser brevirostrum*) in the Holyoke Pool, Connecticut River, Massachusetts. Ph.D. Thesis. University of Massachusetts, Amherst, 136 pp.

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Safety and Design Assessment

Gill Mill (D Wheel) Hydroelectric Project

FERC Project No. 2775-001, MA

Project Safety

The applicant for the Gill Mill (D Wheel) Project is Linweave, Inc., a manufacturer of paper products. No dam or spillway is included in the project works. All water is delivered to the project via the Holyoke Second Level Canal, which is owned and operated by the Holyoke Water Power Company (HWP).

The New York Regional Office (NYRO), in an Operation Inspection Report dated October

10, 1986, indicated that the existing project had no downstream hazard potential. Since there is no dam, the staff concludes that there are no dam safety problems.

Project Design

The existing project works consist of: (1) a gated intake with submerged trashracks located on the Second Level Canal of the HWP; (2) a 295-foot-long, 12-foot-diameter steel penstock; (3) a single runner, Francis turbine directly coupled to a 450-kilowatt (kW) Westinghouse generator; (4) two 125-foot-long, 7-foot-wide by 10-foot-high arched, brick-lined tailrace tunnels; (5) a concrete gated outlet structure where the tailwater empties into a channel that leads to the Connecticut River; and (6) appurtenant facilities. The 310-foot-long by 325-foot-wide Gill Mill building which houses the generating equipment is not considered part of the project works.

The primary transmission lines to be included in a new license for Project No. 2775 can be described as a 660-foot run of three-phase, 0.6-kilovolt (kV) overhead line extending from the 0.6-kV terminals of the project generator to the 0.6-kV terminals of the Mt. Tom step-up transformer; and a 90-foot run of three-phase, 13.8-kV overhead line extending from the 13.8-kV terminals of the Mt. Tom step-up transformer bank to the 13.8-kV substation owned by the Holyoke Water Power Company (HWP).

In addition to the primary lines, the new license should include the single-runner Francis turbine, the 450-kilowatt (kW) Westinghouse generator, all necessary switchgear, all installed electrical protection and control apparatus, and all instrumentation. No step-up transformer is included since Project No. 2775 shares the kilovoltampere (kVA) capacity of the Mt. Tom step-up transformer bank.

The applicant has proposed no new construction or improvements for the existing project; therefore, the project license does not need to include any special engineering articles.

The NYRO October 1986 Operation Inspection Report cited no deficiencies in project safety or operation. There is no dam within the project boundaries.

The staff concludes that the project would be safe and adequate if operated in conformance with the terms of a new license.

Water Resource Planning

The project works would contain one 450-kW generator directly connected to a Francis turbine. The gross head at the site ranges from 24 to 32 feet depending upon the tailwater elevation and the average head is 30 feet. The design head of the turbine is 32 feet and its

hydraulic capacity is estimated to be 161 cubic feet per second (cfs). The applicant indicated that the project generated 1,790 megawatthours (MWh) annually. The staff finds that the plant factor would be 45 percent. The project would continue to be operated manually in a run-of-river mode.

All water to the project is delivered via the Second Level Canal. The Second Level Canal is one of a series of three canals (First Level Canal, Second Level Canal, and Third Level Canal) that receives water from the Hadley Falls Project (FERC Project No. 2004) on the Connecticut River. The HWP owns and operates the Hadley Falls Project and its canal system, which delivers water to various manufacturing and other business concerns for process purposes and power generation. The applicant for the Gill Mill (D Wheel) Project is Linweave, Inc.

The water for power generation is allocated in the form of mill powers (mp) to owners of lands adjacent to the canal system, under indentures or contracts between the individual property owners and the HWP.

These "mp" quantities vary according to water flow in the Connecticut River and fall into the following three categories:

Permanent power - the amount of water sold to Linweave whenever the average daily river flows in the Connecticut River are equal to or greater than 3,100 cfs.

Surplus power - water offered for sale to owners of the so-called permanent power rights whenever average river flows in the Connecticut River are equal to or greater than 3,600 cfs.

Non-permanent power - water which is not guaranteed, but which would be furnished when there is more than a sufficient quantity of water in the river to supply all the permanent power owners together with 50 percent of it as surplus. Water would be supplied 6 days a week (but not on Sundays or holidays) when the river flows are equal to or greater than 3,865 cfs. Sunday and holiday operation is allowed when the average river flows exceed approximately 4,300 cfs.

Under the allocation terms of the indentures, Linweave is entitled, in perpetuity, to draw a carefully prescribed quantity of water from the HWP canal system for power generation and discharge it into the Connecticut River below the project. Linweave is also entitled to purchase and use such surplus water as the HWP makes available from time to time.

The Gill Mill (D Wheel) Project is authorized one type of water allocation rights based on the indentures: non-permanent. For non-permanent power allocations, the Gill Mill (D Wheel)

Project is authorized to withdraw 5.2 mp or 150 cfs. Based on the staff's flow duration curve for the Connecticut River, the applicant can withdraw 150 cfs about 87 percent of the time. Whenever the flows in the Connecticut River exceed 15,000 cfs, the applicant can withdraw the maximum hydraulic capacity of the turbine unit, which is 161 cfs, from the Second Level Canal. The staff estimates that this could occur about 31 percent of the time.

The applicant has estimated that the project operates at its maximum capacity (161 cfs) about 26 percent of the time, and at its non-permanent allocation (150 cfs) about 58 percent of the time. Based on the applicant's estimates, the project would be shut down 16 percent of the time. The NYRO 1986 Operation Inspection Report indicated that the canal system is shut down 3 times a year: once in April, once in July, and once in October. During those periods, the canal system is drained, inspected, and repaired if needed. The repairs are generally scheduled for the July shutdown.

There are certain periods of the year when the project cannot operate and the applicant is directed by the HWP to discontinue drawing water from the canal system. These periods include: (1) periods when the canal system is dewatered for inspection and maintenance; (2) periods of low flow in the Connecticut River when a public authority has required that the low flows be released at the Hadley Falls Project rather than through the canals according to the indentures, without generating power; and (3) periods when a public authority requires that the waters of the Connecticut River flow through the HWP's hydroelectric generating facilities at the Hadley Falls Project rather than through the canal system according to the indentures. During the latter periods when the HWP generates power at the Hadley Falls Project rather than releases water through the canal system, the applicant is entitled to compensation in kilowatthours (in lieu of water) under the terms of the Water Use Agreement (or Economic Dispatch Agreement). In 1987, the compensation provided under the Economic Dispatch Agreement amounted to 1,545 MWh for the eight projects owned by the applicant.

The staff's independent analysis shows that the applicant makes reasonable use of its allocated water. Because of the water allocation limits of the HWP, the applicant cannot develop additional potential at the site. Hence, the staff concludes that the applicant has properly developed the head and hydraulic potential of the site.

The August 1983 Planning Status Report for the Connecticut River Basin lists 19 existing hydroelectric projects, including the Gill Mill

(D Wheel) Project, which are located on the canal system owned by HWP. The applicant owns eight of these projects. The report also listed the Holyoke Project on the canal system as a potential project with an installed capacity of 1.222 MW and an annual generation of 13,165 MWh. The report did not indicate any proposed project on the canal system that would be in conflict with the Gill Mill (D Wheel) Project.

The staff's review of the state and federal agency comments and of seven comprehensive resource development plans identified no plans with which the existing project would be in conflict within this reach of the Second Level Canal. The staff presently has no specific comments or recommendations from reviewing agencies addressing flood control, navigation, or water supply requirements for the Second Level Canal. No competing applications for the project are currently pending before the Commission.

The City of Holyoke, Massachusetts Gas and Electric Department, and the HWP filed petitions to intervene in the licensing proceeding. Neither party opposes the issuance of a license, but each want to protect its interests. The HWP submitted a series of technical comments correcting certain information in the application. None of the corrections affect this report.

The generation from this project is equivalent to generation produced from burning 2,940 barrels of oil or 830 tons of coal annually in a steam-electric plant.

In summary, the staff's analysis shows that the existing project is properly designed to develop the hydropower potential of the site.

Economic Evaluation

The proposed project would be economically beneficial, so long as the projected levelized

cost is less than the levelized cost of alternative energy and capacity.

In the case of the Gill Mill (D Wheel) Project, the applicant has proposed no new construction. Hence, the levelized project costs would be the operation and maintenance costs and administrative and general costs. These costs are small compared to the value of the power.

The applicant currently sells the project power to Fitchburg Gas & Electric Light Company, pursuant to a power sales agreement dated March 25, 1982, and it would continue to do so.

The staff concludes that the existing project is economically beneficial.

Exhibits

The staff concludes that the following parts of exhibit A and the following exhibit F drawings conform to the Commission's rules and regulations. The staff therefore includes these in the license:

Exhibit A - The following sections of exhibit A filed November 25, 1988:

The turbine and generator description on page A-2; the transmission line description on pages A-2 and A-3, as corrected by letter dated April 10, 1989; and the additional mechanical and electrical equipment description on pages A-1 through A-7.

<i>Exhibit</i>	<i>FERC No.</i>	<i>Showing</i>
F-1	2775-3	Site Plan
F-2	2775-4	Powerhouse Plan and Elevation

Preparers

Ronald E. Spath, Civil Engineer
C. Frank Miller, Electrical Engineer

[¶ 62,297]

Linweave, Inc., Project No. 2775-001 - Massachusetts

Order Issuing New License (Minor Project)

(Issued June 29, 1989)

Fred E. Springer, Director, Office of Hydropower Licensing.

Linweave, Inc. has filed a license application under Part I of the Federal Power Act (Act) to continue to operate and maintain the Gill Mill (D Wheel) Project, located on the Holyoke Canal, in Hampden County, Massachusetts. The hydroelectric facilities located along the Holyoke Canal system affect navigable waters of the United States.¹ The license for the project, which was issued on July 19, 1977 [59 FPC 736], with an effective date of March 1, 1941, expires on February 28, 1991. The existing license waived section 15 of the Act only as it relates to federal takeover.

Notice of the application has been published. No protests were filed in this proceeding, and

no agency objected to issuance of this license. Comments received from interested agencies and individuals have been fully considered in determining whether to issue this license. Motions to intervene were filed by the City of Holyoke Gas & Electric Department and the Holyoke Water Power Company (HWP) in order to be parties in this proceeding. HWP also requests that any license issued which utilizes HWP's Holyoke Canal System water be conditioned, as was the previous license, to require cooperation with HWP as the licensee for the Hadley Falls Project No. 2004. Article 202 is included to provide for appropriate cooperation.

¹ See 33 FPC 593, 594 (1965).

Comprehensive Development

Sections 4(e) and 10(a)(1) of the Act require the Commission to consider and balance in the public interest all uses of the waterway on which a project is proposed to be located.

The Gill Mill (D Wheel) Project has operated under the terms of its existing license since 1977. In the environmental assessment (EA), the staff analyzed the environmental effects of the continued operation of the project. Neither the resource agencies nor staff identified any significant conflicts between continued operation of the project as proposed by the applicant, and the environmental values of the project area.

Three alternatives to relicensing the Gill Mill (D Wheel) Project were also considered by the staff in its EA. They include: (1) issuance of an annual license; (2) issuance of a non-power license; and (3) denial of a license application. No alternative was identified that would have a higher or better use of the project in terms of providing power and environmental benefits without significant environmental cost.

Section 10(a)(2) of the Act also requires the Commission to consider the extent to which a proposed project is consistent with an existing federal, state, or local comprehensive plan. Under section 10(a)(2), federal, and state agencies filed seven comprehensive plans that address resources in Massachusetts. Of these plans, staff identified and reviewed four plans relevant to this project.² No conflicts between the proposed Gill Mill (D Wheel) Project and these four plans were found.

Therefore, the project as conditioned is determined to be best adapted to a comprehensive plan, pursuant to Section 10(a) of the Act, for improving a waterway and would provide for adequate protection, mitigation, and enhancement of fish and wildlife pursuant to Section 10(j) of the Act.

Recommendations of Federal and State Fish and Wildlife Agencies

Section 10(j) of the Act requires the Commission to include license conditions, based on recommendations of federal and state fish and wildlife agencies, for the protection, mitigation, and enhancement of fish and wildlife. The environmental assessment for the Gill Mill (D Wheel) Project addresses the concerns of the federal and state fish and wildlife agencies;

however, recommendations are not needed for continued operation of the project.

ECPA Findings

Section 10(a)(2)(C) and section 15(a) of the Federal Power Act, as amended by the Electric Consumers Protection Act of 1986 (ECPA), requires the Commission to consider in writing the following factors in issuing new licenses.

The following discussions apply individually and collectively to the eight hydro projects owned and operated by Linweave, Inc. The eight projects are identified by FERC project numbers: 2497, 2758, 2766, 2768, 2770, 2771, 2772, and 2775.

Consumption Efficiency Improvement Programs (Section 10(a)(2)(C))

Since the applicant's primary business is the manufacture of paper products and not the generation or sale of electric power, no discussion of on-going or planned conservation and load-management programs is required in this document.

The Plans and Abilities of the Applicant to Comply with the Articles, Terms, and Conditions of Any License Issued to it and Other Applicable Provisions of Part I of the Act (Section 15(a)(2)(A))

The staff has reviewed the plans of the applicant to comply with the articles, terms, and conditions of any license issued to Linweave, Inc.

A review of the compliance record of the applicant indicates that the applicant's compliance with the terms and conditions of its current license has been satisfactory. The staff concludes that the applicant has demonstrated its ability to comply in a good faith manner with all articles, terms, and conditions of the license, and the staff concludes that the applicant would perform in a competent manner if issued a new license for the project.

The Plans of the Applicant to Manage, Operate, and Maintain the Project Safely (Section 15(a)(2)(B))

The staff has reviewed the applicant's plans to manage, operate, and maintain the project safely. There is no dam within the project boundaries to operate and maintain.

² Connecticut River 1982 Water Quality Management Plan, June 1983, Massachusetts Division of Water Pollution Control; Connecticut River Basin Fish Passage, Flow, and Habitat Alteration Considerations in Relation to Anadromous Fish Restoration, October 1981, Technical Committee for Fisheries Management of the Connecticut River; The Outdoor

Heritage of Massachusetts, SCORP 1983-1988, December 1983, Massachusetts Department of Environmental Management; A Strategic Plan for the Restoration of Atlantic Salmon to the Connecticut River Basin, September 1982, Policy Committee for Fisheries Management of the Connecticut River.

The eight projects draw carefully prescribed quantities of water from the Second Level Canal and discharge it to the Connecticut River below the projects. There is a flood wall located between the eight projects and the Connecticut River that ensures protection during flood conditions. When the river elevations reach 62 feet or higher, the eight projects are shut down and the headgates and tailrace gates are closed. The City of Holyoke Department of Public Works is responsible for implementing the flood wall operation schedule and closing the tailrace gates of the eight projects.

The applicant has operated the eight projects with a perfect employee safety and public safety record. There have been no deaths or lost-time injuries to employees from project operations, nor is there any record of injury or death to the public within the project boundaries.

Based upon a review of the available information on the project safety plans, the staff concludes that the applicant is capable of managing, operating, and maintaining the project in a safe manner.

The Plans and Abilities of the Applicant to Operate and Maintain the Project in a Manner Most Likely to Provide Efficient and Reliable Electric Service (Section 15(a)(2)(C))

The staff has reviewed the operation inspection reports by the NYRO and the applicant's project operation reports.

The applicant has full time employees in its engineering department that monitor the eight projects, including physically checking each unit several times daily. Additionally, the projects have automatic safety devices to shut down the units in case of abnormal operating conditions.

The applicant cleans the trashracks and lubricates the mechanical machinery regularly. The applicant provides for periodic inspection of the penstock and provides maintenance when needed.

The applicant has reported a total of seven unscheduled outages for the eight projects over the last five years. The outages ranged in length from 48 days to 114 days during which time the equipment was repaired. The applicant has rebuilt and/or overhauled seven of the generating units since February 1979 when the applicant purchased the eight projects.

The applicant has no plans to increase generation at the eight projects. The main reason for this is that the applicant is entitled to withdraw only a carefully prescribed quantity of water from the Second Level Canal under the terms of certain indenture agreements with HWP.

The applicant is in the paper-products manufacturing business, which is a highly competitive field and is very energy-intensive. Because of the competition in the paper-products market, the applicant must operate the project in the most efficient and reliable manner to maximize electric power sales revenues available to offset power purchases for use in its paper manufacturing operations.

The staff concludes that the project is being operated in an efficient and reliable manner.

The Need of the Applicant Over the Short and Long Terms for the Electricity Produced by the Project to Serve Its Customers (Section 15(a)(2)(D))

The applicant, Linweave, Inc., is a manufacturer of paper products and, as such, does not sell any of the electrical output of the eight hydroelectric projects (which it owns and operates as the current licensee) to end-use customers. Therefore, this document does not address the applicant's need for the electricity generated by the eight projects to serve its customers. The paper-products manufacturing business is today a highly competitive industry. Production costs in this industry are very energy intensive, due to the large amounts of electric energy used for the manufacture of paper. When deprived of a low-cost source (or sources) of electric energy, a paper manufacturer cannot survive in the market place for paper products.

All eight of the hydropower projects for which the applicant is applying for new licenses are operated in the run-of-the-river mode; and, as a result, the capacity and energy produced by them depend upon the available streamflow provided by the Second Level Canal of the Holyoke Water Power Company. This flow is subject to seasonal and yearly variations. The applicant's electric power demands at the several paper mills are determined by factors which are in no way correlated with water flow in the canal system. Because of this, and for other reasons affecting the applicant's paper-making electrical energy costs, Linweave has found it to be economically advantageous to sell the output of the eight projects to a local electric utility and purchase the power required by the Linweave paper mills.

The total net electrical output from all eight of the projects is currently being sold, and is expected to continue to be sold to Fitchburg Gas and Electric Light Company, pursuant to a power sales agreement dated March 25, 1982.

The applicant's present and future need for the electric power produced by the eight hydro projects, with which this document is concerned, can be stated in few words: revenues

received from the sale of project capacity and energy are used to offset the cost of capacity and energy purchased on an "as-needed, total requirements" purchase agreement with a local utility, thus improving Linweave's competitive position in the paper products marketplace, which may prove necessary for industrial survival.

The total installed capacity of the eight hydro projects is 3.362 megawatts, and the applicant estimates that the projects are capable of producing an average of 16,997 megawatthours of energy annually.

The staff concludes that there is a need for the project power over the short and the long term.

The Existing and Planned Transmission Services of the Applicant (Section 15(a)(2)(E))

If the applicant is issued new licenses for the eight hydro projects listed above, no changes of the existing transmission system, its operation, or operating characteristics would occur as a result thereof, and none are planned.

If new licenses are denied, the transmission system, or systems associated with the eight projects, would no longer be required, since the applicant would no longer generate power to sell. The applicant would continue to purchase "all requirements" power required for the operation of the paper mills from a local utility. Transmission would not be affected by denial of the licenses.

The staff concludes that the transmission services are adequate as they currently exist.

Whether the Plans of the Applicant will be Achieved, to the Greatest Extent Possible, in a Cost Effective Manner (Section 15(a)(2)(F))

The Gill Mill was constructed in 1880 and the present hydroelectric generating unit rebuilt in 1983. No new construction is proposed. The annual cost of operating the project would be its annual operation and maintenance costs. Continued future project operation would serve to provide an economically efficient source of energy for Linweave, Inc. The staff concludes that the project is economically beneficial.

The Applicant's Record of Compliance with the Terms and Conditions of the Existing License (Section 15(a)(3))

The compliance records of Linweave, Inc., with the terms and conditions of its existing licenses, are satisfactory. Further, the licensee has maintained the projects in a satisfactory manner.

The licensee is reminded that failure to comply with the terms and conditions of this license will subject it to the enforcement and penalty provisions of section 31 of the Federal Power Act.

Term of License

Section 15 of the Act, as amended by ECPA specifies that any license issued under section 15 shall be for a term which the Commission determines to be in the public interest, but not less than 30 years, nor more than 50 years from the date the license is issued. This provision is similar to pre-ECPA Commission policy, which was to establish from the expiration date of the existing license, 30-year terms for those projects which proposed no new construction or capacity, 40-year terms for those projects that proposed a moderate amount of new development, and 50-year terms for those projects that proposed a substantial amount of new development.³

Linweave, Inc. proposes no modifications to the existing project facilities or change in operation of the project. However, the existing license will not expire until February 28, 1991. Accordingly, the new license for the project will be for a term of 30 years from the expiration of the existing license.

Summary of Findings

An EA was issued for this project. Background information, analysis of impacts, support for related license articles, and the basis for a finding of no significant impact on the environment are contained in the EA attached to this order. Issuance of this license is not a major federal action significantly affecting the quality of the human environment.

The design of this project is consistent with the engineering standards governing dam safety. The project will be safe if operated and maintained in accordance with the requirements of this license. Analysis of related issues is provided in the Safety and Design Assessment attached to this order.

The Director, Office of Hydropower Licensing, concludes that the project would not conflict with any planned or authorized development, and would be best adapted to comprehensive development of the waterway for beneficial public uses.

The Director orders:

(A) This license is issued to Linweave, Inc. (licensee), for a period of 30 years, effective March 1, 1991, to operate and maintain the Gill Mill (D Wheel) Project. This license is

³ See *Montana Power Company*, 56 FPC 2008 (1976).

subject to the terms and conditions of the Act, which is incorporated by reference as part of this license, and subject to the regulations the Commission issues under the provisions of the Act.

(B) The project consists of:

(1) All lands, to the extent of the licensee's interests in those lands, shown by exhibit G:

<i>Exhibit</i>	<i>FERC No.</i>	<i>Showing</i>
G-1	2775-3	Project Location

(2) Project works consisting of: (a) a gated intake with submerged trashracks located on the second level canal of the Holyoke Water Power Company; (b) a 12-foot-diameter penstock 295 feet long; (c) a 450-kW generating unit located within the Gill Mill building; (d) two parallel 7-foot-wide by 10-foot-high arched brick-lined tailrace tunnels extending from the draft tube to an existing outlet structure; (e) a concrete gated outlet structure where tailwater empties into a channel that leads to the Connecticut River; (f) a 13.8-kV transmission line 660 feet long that connects the project to an existing transmission line; and (g) appurtenant facilities.

The project works generally described above are more specifically shown and described by those portions of exhibits A and F recommended for approval in the attached Safety and Design Assessment.

(3) All of the structures, fixtures, equipment or facilities used to operate or maintain the project, all portable property that may be employed in connection with the project and all riparian or other rights that are necessary or appropriate in the operation or maintenance of the project.

(C) The exhibit G described above and those sections of exhibits A and F recommended for approval in the attached Safety and Design Assessment are approved and made part of the license.

(D) The following sections of the Act are waived and excluded from the license for this minor project:

4(b), except the second sentence; 4(e), insofar as it relates to approval of plans by the Chief of Engineers and the Secretary of the Army; 6, insofar as it relates to public notice and to the acceptance and expression in the license of terms and conditions of the Act that are waived here; 10(c), insofar as it relates to depreciation reserves; 10(d); 10(f); 14, except insofar as the power of condemnation is reserved; 15; 16; 19; 20; and 22.

(E) This license is subject to the articles set forth in Form L-9 (October 1975) [reported at 54 FPC-1852], entitled "Terms and Conditions of License for Constructed Minor Project

Affecting Navigable Waters of the United States", and the following additional articles:

Article 201. The licensee shall pay the United States the following annual charge, effective March 1, 1991:

For the purpose of reimbursing the United States for the cost of administration of Part I of the Act, a reasonable amount as determined in accordance with the provisions of the Commission's regulations in effect from time to time. The authorized installed capacity for that purpose is 600 horsepower.

Article 202. The Licensee shall cooperate with the licensee for Project No. 2004 in order that the conditions of Article 16 of the license for Project No. 2004 can be fulfilled.

Article 401. Authority is reserved to the Commission to require the licensee to construct, operate, and maintain, or provide for the construction, operation, and maintenance of such fishways, as may be prescribed by the Secretary of the Interior pursuant to section 18 of the Federal Power Act.

Article 402. (a) In accordance with the provisions of this article, the licensee shall have the authority to grant permission for certain types of use and occupancy of project lands and waters and to convey certain interests in project lands and waters for certain types of use and occupancy, without prior Commission approval. The licensee may exercise the authority only if the proposed use and occupancy is consistent with the purposes of protecting and enhancing the scenic, recreational, and other environmental values of the project. For those purposes, the licensee shall also have continuing responsibility to supervise and control the use and occupancies for which it grants permission, and to monitor the use of, and ensure compliance with the covenants of the instrument of conveyance for, any interests that it has conveyed, under this article. If a permitted use and occupancy violates any condition of this article or any other condition imposed by the licensee for protection and enhancement of the project's scenic, recreational, or other environmental values, or if a covenant of a conveyance made under the authority of this article is violated, the licensee shall take any lawful action necessary to correct the violation. For a permitted use or occupancy, that action includes, if necessary, cancelling the permission to use and occupy the project lands and waters and requiring the removal of any non-complying structures and facilities.

(b) The type of use and occupancy of project lands and water for which the licensee may grant permission without prior Commission approval are: (1) landscape plantings; (2) non-commercial piers, landings, boat docks, or similar structures and facilities that can accommo-

date no more than 10 watercraft at a time and where said facility is intended to serve single-family type dwellings; and (3) embankments, bulkheads, retaining walls, or similar structures for erosion control to protect the existing shoreline. To the extent feasible and desirable to protect and enhance the project's scenic, recreational, and other environmental values, the licensee shall require multiple use and occupancy of facilities for access to project lands or waters. The licensee shall also ensure, to the satisfaction of the Commission's authorized representative, that the use and occupancies for which it grants permission are maintained in good repair and comply with applicable state and local health and safety requirements. Before granting permission for construction of bulkheads or retaining walls, the licensee shall: (1) inspect the site of the proposed construction, (2) consider whether the planting of vegetation or the use of riprap would be adequate to control erosion at the site, and (3) determine that the proposed construction is needed and would not change the basic contour of the reservoir shoreline. To implement this paragraph (b), the licensee may, among other things, establish a program for issuing permits for the specified types of use and occupancy of project lands and waters, which may be subject to the payment of a reasonable fee to cover the licensee's costs of administering the permit program. The Commission reserves the right to require the licensee to file a description of its standards, guidelines, and procedures for implementing this paragraph (b) and to require modification of those standards, guidelines, or procedures.

(c) The licensee may convey easements or rights-of-way across, or leases of, project lands for: (1) replacement, expansion, realignment, or maintenance of bridges and roads for which all necessary state and federal approvals have been obtained; (2) storm drains and water mains; (3) sewers that do not discharge into project waters; (4) minor access roads; (5) telephone, gas, and electric utility distribution lines; (6) non-project overhead electric transmission lines that do not require erection of support structures within the project boundary; (7) submarine, overhead, or underground major telephone distribution cables or major electric distribution lines (69-kV or less); and (8) water intake or pumping facilities that do not extract more than one million gallons per day from a project reservoir. No later than January 31 of each year, the licensee shall file three copies of a report briefly describing for each conveyance made under this paragraph (c) during the prior calendar year, the type of interest conveyed, the location of the lands subject to the conveyance, and the nature of the use for which the interest was conveyed.

(d) The licensee may convey fee title to, easements or rights-of-way across, or leases of project lands for: (1) construction of new bridges or roads for which all necessary state and federal approvals have been obtained; (2) sewer or effluent lines that discharge into project waters, for which all necessary federal and state water quality certification or permits have been obtained; (3) other pipelines that cross project lands or waters but do not discharge into project waters; (4) non-project overhead electric transmission lines that require erection of support structures within the project boundary, for which all necessary federal and state approvals have been obtained; (5) private or public marinas that can accommodate no more than 10 watercraft at a time and are located at least one-half mile from any other private or public marina; (6) recreational development consistent with an approved Exhibit R or approved report on recreational resources of an Exhibit E; and (7) other uses, if: (i) the amount of land conveyed for a particular use is five acres or less; (ii) all of the land conveyed is located at least 75 feet, measured horizontally, from the edge of the project reservoir at normal maximum surface elevation; and (iii) no more than 50 total acres of project lands for each project development are conveyed under this clause (d)(7) in any calendar year. At least 45 days before conveying any interest in project lands under this paragraph (d), the licensee must submit a letter to the Director, Office of Hydropower Licensing, stating its intent to convey the interest and briefly describing the type of interest and location of the lands to be conveyed (a marked exhibit G or K map may be used), the nature of the proposed use, the identity of any federal or state agency official consulted, and any federal or state approvals required for the proposed use. Unless the Director, within 45 days from the filing date, requires the licensee to file an application for prior approval, the licensee may convey the intended interest at the end of that period.

(e) The following additional conditions apply to any intended conveyance under paragraph (c) or (d) of this article:

(1) Before conveying the interest, the licensee shall consult with federal and state fish and wildlife or recreation agencies, as appropriate, and the State Historic Preservation Officer.

(2) Before conveying the interest, the licensee shall determine that the proposed use of the lands to be conveyed is not inconsistent with any approved exhibit R or approved report on recreational resources of an exhibit E; or, if the project does not have an approved exhibit R or approved report on recreational resources, that

the lands to be conveyed do not have recreational value.

(3) The instrument of conveyance must include covenants running with the land adequate to ensure that: (i) the use of the lands conveyed shall not endanger health, create a nuisance, or otherwise be incompatible with overall project recreational use; and (ii) the grantee shall take all reasonable precautions to insure that the construction, operation, and maintenance of structures or facilities on the conveyed lands will occur in a manner that will protect the scenic, recreational, and environmental values of the project.

(4) The Commission reserves the right to require the licensee to take reasonable remedial action to correct any violation of the terms and conditions of this article, for the protection and enhancement of the project's scenic, recreational, and other environmental values.

(f) The conveyance of an interest in project lands under this article does not in itself change the project boundaries. The project boundaries may be changed to exclude land conveyed under this article only upon approval of revised exhibit G or K drawings (project boundary maps) reflecting exclusion of that land. Lands conveyed under this article will be excluded from the project only upon a determination that the lands are not necessary for project purposes, such as operation and maintenance, flowage, recreation, public access, protection of environmental resources, and shoreline control, including shoreline aesthetic values. Absent extraordinary circumstances, proposals to exclude lands conveyed under this article from the project shall be consolidated for consideration when revised exhibit G or K drawings would be filed for approval for other purposes.

(g) The authority granted to the licensee under this article shall not apply to any part of the public lands and reservations of the United States included within the project boundary.

(F) The licensee shall serve copies of any Commission filing required by this order on any entity specified in this order to be consulted on matters related to that filing. Proof of service on these entities must accompany the filing with the Commission.

(G) This order is issued under authority delegated to the Director and is final unless appealed to the Commission by any party within 30 days from the issuance date of this order. Filing an appeal does not stay the effective date of this order or any date specified in

this order. The licensee's failure to appeal this order shall constitute acceptance of the license.

Environmental Assessment¹

Federal Energy Regulatory Commission
Office of Hydropower Licensing
Division of Project Review

Date: June 16, 1989

Project name: Gill Mill, D Wheel, Hydroelectric Project

FERC Project No. 2775-001

A. Application

1. Application type: New minor license
2. Date filed with the Commission: November 25, 1988
3. Applicant: Linweave, Inc.
4. Water body: Holyoke Canal; River basin: Connecticut
5. Nearest city or town: Holyoke (See figure 1.)
6. County: Hampden; State: Massachusetts

B. Purpose and Need for Action

1. Purpose.

Linweave estimates the average annual energy generation of the Gill Mill, D Wheel, Hydroelectric Project is 1,790 megawatt-hours. Project power is sold to the Fitchburg Gas and Electric Light Company.

2. Need for power.

The power from the project is useful in meeting a small part of the need for power projected for the New England Power Pool area of the Northeast Power Coordinating Council (NPCC) region. Power generated at the project displaces fossil-fueled power generation in the NPCC region, thus conserving nonrenewable fossil fuels and reducing the emission of noxious byproducts caused by the combustion of fossil fuels.

C. Proposed Project and Alternatives

1. Description of the proposed action. (See figure 2.)

The existing operating project was issued an initial license in 1977, which will expire in 1991. The licensee has filed for a new license for the continued operation of the project. The existing operating project consists of: (i) a gated intake with submerged trashracks located on the second level canal of the Holyoke Water Power Company; (ii) a 12-foot-

¹ Figures and attachments referenced in the text are omitted from this document due to reproduction requirements.

diameter penstock 295 feet long; (iii) an existing 450-kW generating unit located within the Gill Mill building; (iv) two parallel 7-foot-wide by 10-foot-high arched brick-lined tailrace tunnels extending from the draft tube to an existing outlet structure; (v) a concrete gated outlet structure where tailwater empties into a channel that leads to the Connecticut River; (vi) a 13.8-kV transmission line 660 feet long that connects the project to an existing transmission line; and (vii) appurtenant facilities. The project operates in a run-of-river mode. Linweave does not propose any construction or change in project operation. The Holyoke Water Power Company controls flows from the Connecticut River into the canal system under a FERC major license granted to Project No. 2004.

2. Applicant's proposed mitigative measures.

Since Linweave proposes to continue operating the project as in the past, with no new construction, no changes to the hydroelectric project, and no changes in the use and release of water, Linweave proposes no mitigative measures.

3. Federal lands affected.

No.

4. Alternatives to the proposed project.

a. *Issuance of an annual license.* Section 15(a) of the Federal Power Act (Act), 16 U.S.C. § 808(a), provides for the issuance of annual licenses to the prior licensee if the license expires pending the relicensing determination. Under this alternative, an annual license would continue to be issued to Linweave until a new license is issued. The annual license contains the same terms as the expired license, thereby maintaining the status quo.

b. *Issuance of a non-power license.* Section 15(f) of the Act, § 808(b), authorizes the Commission to issue a license for nonpower use when the Commission "finds that in conformity with a comprehensive plan for improving or developing a waterway or waterways for beneficial public uses all or part of any licensed project should no longer be used or adapted for use for power purposes." A license that is granted by the Commission for nonpower use is temporary. When the Commission finds that a state, municipality, interstate agency, or another federal agency is authorized and willing to assume regulatory supervision of the lands and facilities included under the nonpower license and does so, the Commission shall thereupon terminate the nonpower license.

c. *Denial of the license application.* Denial of the license application could lead to removal of the power facilities and removal of all project works.

D. Consultation and Compliance

1. Fish and wildlife agency consultation (Fish & Wildlife Coordination Act).

- a. U.S. Fish & Wildlife Service: Yes.
- b. State(s): Yes.
- c. National Marine Fisheries Service: Yes.

2. Section 7 consultation (Endangered Species Act).

- a. Listed species: Present.
- b. Consultation: Not required.

Remarks: The federally listed endangered shortnose sturgeon under the jurisdiction of the National Marine Fisheries Service (NMFS) inhabits the lower segment of the Connecticut River from the river's mouth upstream to the Holyoke dam. A small landlocked population is found in the pool above the Holyoke dam (Taubert, 1980). Dadswell, *et al.* (1984) estimated that between 800 and 1000 shortnose sturgeon inhabit the lower portion (below Holyoke) of the Connecticut River. The NMFS reports that due to the trashrack spacing, any sturgeon which might enter the canal would be prevented from entrainment into the project (personal communication, Chris Mantzaris, staff, National Marine Fisheries Service, Gloucester, Massachusetts, June 13, 1989).

3. Section 401 certification (Clean Water Act).

Required; applicant requested certification on 10/17/88.

Status: Granted by the certifying agency on 03/30/89.

4. Cultural resource consultation (Historic Preservation Act).

- a. State Historic Preservation Officer: Yes.
- b. National Park Service: Yes.
- c. *National Register* status: Eligible or listed.
- d. Council: Not required.
- e. Further consultation: Not required.

Remarks: The project is adjacent to the Holyoke Canal System, a property listed in the *National Register of Historic Places*. Since there would be no redevelopment, new construction, or changes to the exterior of the property, the project would not affect the canal system or any other *National Register* or eligible properties. The SHPO concurs with this finding (letter from Valerie A. Talmage, Executive Director, Massachusetts Historical Commission, and State Historic Preservation Officer, Boston, Massachusetts, December 9, 1988).

5. Recreational consultation (Federal Power Act).

- a. U.S. Owners: No.
- b. National Park Service: Yes.

c. State(s): Yes.

6. Wild and scenic rivers (Wild and Scenic Rivers Act).

Status: None.

7. Land and Water Conservation Fund lands and facilities (Land and Water Conservation Fund Act).

Status: None.

E. Comments

1. The following agencies and entities provided comments on the application or filed a motion to intervene in response to the public notice dated 03/24/89.

<i>Commenting agencies and other entities</i>	<i>Date of letter</i>
---	-----------------------

Department of the Army, New England Division Corps of Engineers	05/11/89
Environmental Protection Agency	05/17/89
Department of the Interior	05/19/89
Massachusetts Division of Fisheries and Wildlife	05/30/89

<i>Motions to intervene</i>	<i>Date of motion</i>
-----------------------------	-----------------------

City of Holyoke, Gas and Electric Department	03/28/89
Holyoke Water Power Company	05/24/89

2. The applicant did not respond to the comments or motion(s) to intervene.

F. Affected Environment

1. General description of the locale. (See figure 3.)

a. Description of the Connecticut River Basin.

The Connecticut River Basin, with a drainage area of 11,765 square miles, is the largest river basin in New England. Extending from the northernmost part of New Hampshire to Long Island Sound, the river basin has a maximum length in a north-south direction of about 280 miles and a maximum width of about 62 miles. The total drainage area of the basin is 11,765 square miles. The principal tributaries to the mainstem Connecticut River, by state, are the Passumpsic, White, West, Ottauquechee, and Black Rivers in Vermont; the Ammonoosuc, Mascoma, Ashuelot, and Sugar Rivers in New Hampshire; the Millers, Deerfield, Chicopee, and Westfield Rivers in Massachusetts; and the Farmington River in Connecticut.

This complex of rivers and tributaries constitutes one of the most extensively developed hydropower systems in the U.S. There is now a major effort by federal, state, and private sectors to restore Atlantic salmon to the Connecticut River Basin.

The project is located in a heavily industrialized setting between the second level of the Holyoke Canal system and the Connecticut River. The climate is typical of inland Connecticut and Massachusetts with an average temperature of 49.8 degrees Fahrenheit and an average annual precipitation of 44.39 inches.

b. Licensed and exempted projects.

There are 62 existing licensed projects and 38 exempted projects in the Connecticut River Basin, as of June 1, 1989.

c. Pending applications.

There are 10 pending license applications in the Connecticut River Basin, as of June 1, 1989.

d. Cumulative impacts.

Cumulative impacts are defined as impacts on the environment that result from the incremental impacts of an action when added to other past, present, and reasonably foreseeable future actions regardless which agency or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (40 C.F.R., Part 1508.7).

A target resource is an important resource that may be cumulatively affected by multiple development within a basin. The staff identified Atlantic salmon as the target resource in the Connecticut River Basin (Federal Energy Regulatory Commission, 1986). The selection was based on the regional significance and geographic distribution of this species within the river basin. This anadromous fishery resource is described below in section F(2d). Impacts to Atlantic salmon are discussed in section G.

2. Descriptions of the resources in the project impact area (Source: Linweave, Inc., application, exhibit E, unless otherwise indicated).

a. *Geology and soils*: Bedrock in the project area is interbedded sandstone, shale, conglomerate, and basaltic lava. The glacial till deposits that lie on the glaciated surface of the bedrock are overlain by varied glacial lake deposits. The original dry, sandy, surface soils in the project area have been highly altered by construction of the project and by fill and construction activities associated with urban development of the area.

b. *Streamflow*: Water flow in the canal system is controlled at the canal gatehouse in order to supply necessary water to various hydropower and industrial facilities along the

canal. The amount of flow entering the canal system ranges from no flow, when the gate-house is shut down, to 5,155 cubic feet per second, which is the maximum hydraulic capacity of the canal.

c. *Water quality*: The Connecticut River upstream of Holyoke dam is classified as Class B water by the Massachusetts Division of Water Pollution. Class B water is suitable for primary and secondary contact recreation and fish and wildlife resources. Class B water must have dissolved oxygen (DO) levels greater than 5.0 milligrams per liter (mg/l) and a pH between 6.5 and 8.0. The first level canal is classified as Class C. Class C water is suitable for secondary contact recreation and fish and wildlife resources and must have a DO level greater than 5.0 mg/l and a pH between 6.5 and 9.0 standard units. Water in the project area conforms to the state water quality standards.

d. *Fisheries*:

Anadromous: Present.

Anadromous fish species found in the Connecticut River in the vicinity of the project include American shad, Atlantic salmon, blueback herring, sea lamprey, striped bass, shortnose sturgeon, and American eel (catadromous).

Resident: Present.

Resident fish species found in the Connecticut River in the vicinity of the project include carp, channel catfish, smallmouth bass, largemouth bass, spottail shiner, white perch, bluegill, rainbow trout, and brown trout.

e. *Vegetation*: Dominant vegetative species in the vicinity of the project include oak, maple, white pine, pitch pine, grasses, and ornamental shrubs.

f. *Wildlife*: Undeveloped land in the project area provides habitat for the gray squirrel, eastern cottontail rabbit, raccoon, muskrat, beaver, weasel, pheasant, and small field mammals (mice and voles). The industrial area is inhabited by English sparrows, starlings, robins, mockingbirds, Norway rats, raccoons, and eastern cottontail rabbits.

g. *Cultural*:

There are properties listed on, or eligible for listing on, the *National Register of Historic Places* in the project impact area.

Description: The Holyoke Canal System, a contributing element in the Holyoke Canal Historic District, is listed on the *National Register of Historic Places* and is within the area of the project's potential environmental impact. The portion of the canal in the project area was constructed between 1854 and 1857.

h. *Visual quality*: The project is in an industrial area. Its appearance is consistent with that of the surrounding buildings and structures.

i. *Recreation*: The immediate project area receives no significant recreational use because of its location in a highly industrialized area. No recreational facilities are located at the project. Recreational facilities including playgrounds, swimming pools, and a skating rink are available for use within walking distance of the project. The Connecticut River in the project vicinity is used for boating and fishing.

j. *Land use*: The project is entirely within the city of Holyoke. Land in the project area is primarily used for commercial, industrial, and residential purposes. The canal system is used for generating hydroelectric power at several locations.

k. *Socioeconomics*: The socioeconomic well-being of the area is influenced by industrial and urban development.

G. *Environmental Issues and Proposed Resolutions*

There are 3 issues addressed below.

1. *Cumulative impacts on Atlantic salmon resulting from developing several hydropower projects in the Connecticut River Basin*: The Atlantic salmon is currently a primary target species for a major federal, state, and private sector restoration effort. The goal of the restoration program is to provide and to maintain a sport fishery for Atlantic salmon in the Connecticut River, and to restore and maintain a spawning population in selected tributaries (Federal Energy Regulatory Commission, 1986).

Seaward migrating salmon smolts in the river basin pass numerous hydropower developments where they may become entrained and impinged. The more hydropower facilities outmigrating fish have to pass, the greater the fish losses. Among these hydropower facilities are the Holyoke dam and the canal system.

When river discharges are high and water is flowing over the dam, migrating fish pass downstream with little or no delay (Northeast Utilities Service Company, 1984). On the other hand, outmigrating fish would be entrained into the canal system by high flows entering the canal if they arrive at the dam when flashboards, permitting little or no spillage, are in place. Once in the canal, escape is very difficult. Fish can then be entrained in the turbines of hydropower plants operating along the canal.

On February 26, 1988, the Commission ordered the Holyoke Water Power Company (HWPC) to spill water over Holyoke dam when

salmon smolts are migrating downstream (Federal Energy Regulatory Commission, 1988a). [HWPC is the licensee for the Hadley Falls Project (FERC Project No. 2004) and the entity that controls the dam and the water going into the canal.] Spilling water over the Holyoke dam allows migrating salmon smolts to pass safely downstream in the spill, instead of entering the canal system.

Canal users and the HWPC have since implemented an economic dispatch agreement, in which the HWPC passes all flow downstream at the Holyoke dam and sells the users electricity, instead of water, when salmon smolts are migrating downstream. Linweave participates in this agreement. This arrangement prevents flow from entering the canal and attracting outmigrating Atlantic salmon, and minimizes the number of outmigrating Atlantic salmon trapped in the canal, and the number of project-related impacts to fish in the river basin.

Continuing to operate the Gill Mill, D Wheel, Hydroelectric Project would not contribute to cumulative adverse impacts on Atlantic salmon.

2. *Authority to prescribe fish passage facilities.* The Department of the Interior states that fish passage facilities may be needed at the project in the future, and, by letter of May 24, 1989 they reserve the authority to prescribe such fish facilities. The Commission reserves authority to require the licensee to provide fishways, as may be prescribed by the Secretary of Interior pursuant to section 18 of the Federal Power Act, if the need arises in the future.

3. *Entraining fish in the intake structure.* The Massachusetts Division of Fisheries and Wildlife (DFW) recommended the trashracks at the intake structures have a bar spacing not greater than 1 inch to prevent the entrainment of fish. The project's intake opening includes trashracks with one-inch slot width spacing between bars. The bar spacing at the existing structure satisfies the DFW's recommendation.

H. Environmental Impacts

1. Assessment of impacts expected from the applicant's proposed project (P), with the applicant's proposed mitigation and any conditions set by a federal land management agency; the proposed project with any additional mitigation recommended by the staff (Ps); and any action alternative considered (A).

FERC Reports

Assessment symbols indicate the following impact levels:

O = None;	1 = Minor;
2 = Moderate;	3 = Major;
A = Adverse;	B = Beneficial;
L = Long-term;	S = Short term.

Resource	P	Impact Ps	A
a. Geology-Soils	0		
b. Streamflow	0		
c. Water quality:			
Temperature	0		
Dissolved oxygen	0		
Turbidity and sedimentation	0		
d. Fisheries:			
Anadromous	0		
Resident	0		
e. Vegetation	0		
f. Wildlife	0		
g. Cultural:			
Archeological	0		
Historical	0		
h. Visual quality	0		
i. Recreation	0		
j. Land use	0		
k. Socioeconomics	0		

2. Recommended alternative (including proposed, required, and recommended mitigative measures):

Proposed project.

3. Reason(s) for selecting the preferred alternative.

The power generated at this project is produced without any known adverse environmental impacts.

I. Unavoidable Adverse Impacts of the Recommended Alternative

There are no known adverse impacts.

J. Conclusion

Finding of No Significant Impact. Approval of the recommended alternative [H(2)] would not constitute a major federal action significantly affecting the quality of the human environment; therefore, an environmental impact statement (EIS) will not be prepared.

K. Literature Cited

- Dadswell, M.J., B.D. Taubert, T.S. Squires, D. Marchette, and J.L. Buckley. 1984. Synopsis of biological data on shortnose sturgeon (*Acipenser brevirostrum*) Lesueur 1818. National Oceanic and Atmospheric Administration Technical Report NMFS 14, National Oceanic and Atmospheric Administration, Washington, D.C., 45pp.
- Linweave, Inc. 1988. Application for minor license for the Gill Mill, D Wheel, Hydroe-

- lectric Project, FERC Project No. 2775, Massachusetts. November 25, 1988.
- _____. 1989a. Supplement to the application for minor license for the Gill Mill, D Wheel, Hydroelectric Project, FERC Project No. 2775, Massachusetts. February 21, 1989.
- _____. 1989b. Additional information for the application for minor license for the Gill Mill, D Wheel, Hydroelectric Project, FERC Project No. 2775, Massachusetts. March 20, 1989.
- Northeast Utilities Service Company. 1984. Review of cancelled Atlantic salmon smolt (Salmo salar), radiotelemetry study at the Holyoke dam, Massachusetts. Hartford, Connecticut. September 1984.
- Federal Energy Regulatory Commission. 1983. Planning status report for the Connecticut River Basin. Washington, DC. August 1983.
- _____. 1986. Environmental assessment for the Connecticut River Basin. Washington, DC. November 7, 1986.
- _____. 1988a. Order amending license for the Hadley Falls Project, FERC Project No. 2004, Massachusetts. February 26, 1988 [42 FERC ¶ 62,166].
- _____. 1988b. Environmental assessment for the Number 2 Hydro Unit, FERC Project No. 2387, Holyoke, Massachusetts. August 26, 1988.
- Taubert, B.D. 1980. Biology of shortnose sturgeon (*Acipenser brevirostrum*) in the Holyoke Pool, Connecticut River, Massachusetts. Ph.D. Thesis. University of Massachusetts, Amherst, 136 pp.

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Safety and Design Assessment

Gill Mill (D Wheel) Hydroelectric Project
 FERC Project No. 2775-001, MA

Project Safety

The applicant for the Gill Mill (D Wheel) Project is Linweave, Inc., a manufacturer of paper products. No dam or spillway is included in the project works. All water is delivered to the project via the Holyoke Second Level Canal, which is owned and operated by the Holyoke Water Power Company (HWP).

The New York Regional Office (NYRO), in an Operation Inspection Report dated October

10, 1986, indicated that the existing project had no downstream hazard potential. Since there is no dam, the staff concludes that there are no dam safety problems.

Project Design

The existing project works consist of: (1) a gated intake with submerged trashracks located on the Second Level Canal of the HWP; (2) a 295-foot-long, 12-foot-diameter steel penstock; (3) a single runner, Francis turbine directly coupled to a 450-kilowatt (kW) Westinghouse generator; (4) two 125-foot-long, 7-foot-wide by 10-foot-high arched, brick-lined tailrace tunnels; (5) a concrete gated outlet structure where the tailwater empties into a channel that leads to the Connecticut River; and (6) appurtenant facilities. The 310-foot-long by 325-foot-wide Gill Mill building which houses the generating equipment is not considered part of the project works.

The primary transmission lines to be included in a new license for Project No. 2775 can be described as a 660-foot run of three-phase, 0.6-kilovolt (kV) overhead line extending from the 0.6-kV terminals of the project generator to the 0.6-kV terminals of the Mt. Tom step-up transformer; and a 90-foot run of three-phase, 13.8-kV overhead line extending from the 13.8-kV terminals of the Mt. Tom step-up transformer bank to the 13.8-kV substation owned by the Holyoke Water Power Company (HWP).

In addition to the primary lines, the new license should include the single-runner Francis turbine, the 450-kilowatt (kW) Westinghouse generator, all necessary switchgear, all installed electrical protection and control apparatus, and all instrumentation. No step-up transformer is included since Project No. 2775 shares the kilovoltampere (kVA) capacity of the Mt. Tom step-up transformer bank.

The applicant has proposed no new construction or improvements for the existing project; therefore, the project license does not need to include any special engineering articles.

The NYRO October 1986 Operation Inspection Report cited no deficiencies in project safety or operation. There is no dam within the project boundaries.

The staff concludes that the project would be safe and adequate if operated in conformance with the terms of a new license.

Water Resource Planning

The project works would contain one 450-kW generator directly connected to a Francis turbine. The gross head at the site ranges from 24 to 32 feet depending upon the tailwater elevation and the average head is 30 feet. The design head of the turbine is 32 feet and its

hydraulic capacity is estimated to be 161 cubic feet per second (cfs). The applicant indicated that the project generated 1,790 megawatt-hours (MWh) annually. The staff finds that the plant factor would be 45 percent. The project would continue to be operated manually in a run-of-river mode.

All water to the project is delivered via the Second Level Canal. The Second Level Canal is one of a series of three canals (First Level Canal, Second Level Canal, and Third Level Canal) that receives water from the Hadley Falls Project (FERC Project No. 2004) on the Connecticut River. The HWP owns and operates the Hadley Falls Project and its canal system, which delivers water to various manufacturing and other business concerns for process purposes and power generation. The applicant for the Gill Mill (D Wheel) Project is Linweave, Inc.

The water for power generation is allocated in the form of mill powers (mp) to owners of lands adjacent to the canal system, under indentures or contracts between the individual property owners and the HWP.

These "mp" quantities vary according to water flow in the Connecticut River and fall into the following three categories:

Permanent power - the amount of water sold to Linweave whenever the average daily river flows in the Connecticut River are equal to or greater than 3,100 cfs.

Surplus power - water offered for sale to owners of the so-called permanent power rights whenever average river flows in the Connecticut River are equal to or greater than 3,600 cfs.

Non-permanent power - water which is not guaranteed, but which would be furnished when there is more than a sufficient quantity of water in the river to supply all the permanent power owners together with 50 percent of it as surplus. Water would be supplied 6 days a week (but not on Sundays or holidays) when the river flows are equal to or greater than 3,865 cfs. Sunday and holiday operation is allowed when the average river flows exceed approximately 4,300 cfs.

Under the allocation terms of the indentures, Linweave is entitled, in perpetuity, to draw a carefully prescribed quantity of water from the HWP canal system for power generation and discharge it into the Connecticut River below the project. Linweave is also entitled to purchase and use such surplus water as the HWP makes available from time to time.

The Gill Mill (D Wheel) Project is authorized one type of water allocation rights based on the indentures: non-permanent. For non-permanent power allocations, the Gill Mill (D Wheel)

Project is authorized to withdraw 5.2 mp or 150 cfs. Based on the staff's flow duration curve for the Connecticut River, the applicant can withdraw 150 cfs about 87 percent of the time. Whenever the flows in the Connecticut River exceed 15,000 cfs, the applicant can withdraw the maximum hydraulic capacity of the turbine unit, which is 161 cfs, from the Second Level Canal. The staff estimates that this could occur about 31 percent of the time.

The applicant has estimated that the project operates at its maximum capacity (161 cfs) about 26 percent of the time, and at its non-permanent allocation (150 cfs) about 58 percent of the time. Based on the applicant's estimates, the project would be shut down 16 percent of the time. The NYRO 1986 Operation Inspection Report indicated that the canal system is shut down 3 times a year: once in April, once in July, and once in October. During those periods, the canal system is drained, inspected, and repaired if needed. The repairs are generally scheduled for the July shutdown.

There are certain periods of the year when the project cannot operate and the applicant is directed by the HWP to discontinue drawing water from the canal system. These periods include: (1) periods when the canal system is dewatered for inspection and maintenance; (2) periods of low flow in the Connecticut River when a public authority has required that the low flows be released at the Hadley Falls Project rather than through the canals according to the indentures, without generating power; and (3) periods when a public authority requires that the waters of the Connecticut River flow through the HWP's hydroelectric generating facilities at the Hadley Falls Project rather than through the canal system according to the indentures. During the latter periods when the HWP generates power at the Hadley Falls Project rather than releases water through the canal system, the applicant is entitled to compensation in kilowatt-hours (in lieu of water) under the terms of the Water Use Agreement (or Economic Dispatch Agreement). In 1987, the compensation provided under the Economic Dispatch Agreement amounted to 1,545 MWh for the eight projects owned by the applicant.

The staff's independent analysis shows that the applicant makes reasonable use of its allocated water. Because of the water allocation limits of the HWP, the applicant cannot develop additional potential at the site. Hence, the staff concludes that the applicant has properly developed the head and hydraulic potential of the site.

The August 1983 Planning Status Report for the Connecticut River Basin lists 19 existing hydroelectric projects, including the Gill Mill

(D Wheel) Project, which are located on the canal system owned by HWP. The applicant owns eight of these projects. The report also listed the Holyoke Project on the canal system as a potential project with an installed capacity of 1,222 MW and an annual generation of 13,165 MWh. The report did not indicate any proposed project on the canal system that would be in conflict with the Gill Mill (D Wheel) Project.

The staff's review of the state and federal agency comments and of seven comprehensive resource development plans identified no plans with which the existing project would be in conflict within this reach of the Second Level Canal. The staff presently has no specific comments or recommendations from reviewing agencies addressing flood control, navigation, or water supply requirements for the Second Level Canal. No competing applications for the project are currently pending before the Commission.

The City of Holyoke, Massachusetts Gas and Electric Department, and the HWP filed petitions to intervene in the licensing proceeding. Neither party opposes the issuance of a license, but each want to protect its interests. The HWP submitted a series of technical comments correcting certain information in the application. None of the corrections affect this report.

The generation from this project is equivalent to generation produced from burning 2,940 barrels of oil or 830 tons of coal annually in a steam-electric plant.

In summary, the staff's analysis shows that the existing project is properly designed to develop the hydropower potential of the site.

Economic Evaluation

The proposed project would be economically beneficial, so long as the projected levelized

cost is less than the levelized cost of alternative energy and capacity.

In the case of the Gill Mill (D Wheel) Project, the applicant has proposed no new construction. Hence, the levelized project costs would be the operation and maintenance costs and administrative and general costs. These costs are small compared to the value of the power.

The applicant currently sells the project power to Fitchburg Gas & Electric Light Company, pursuant to a power sales agreement dated March 25, 1982, and it would continue to do so.

The staff concludes that the existing project is economically beneficial.

Exhibits

The staff concludes that the following parts of exhibit A and the following exhibit F drawings conform to the Commission's rules and regulations. The staff therefore includes these in the license:

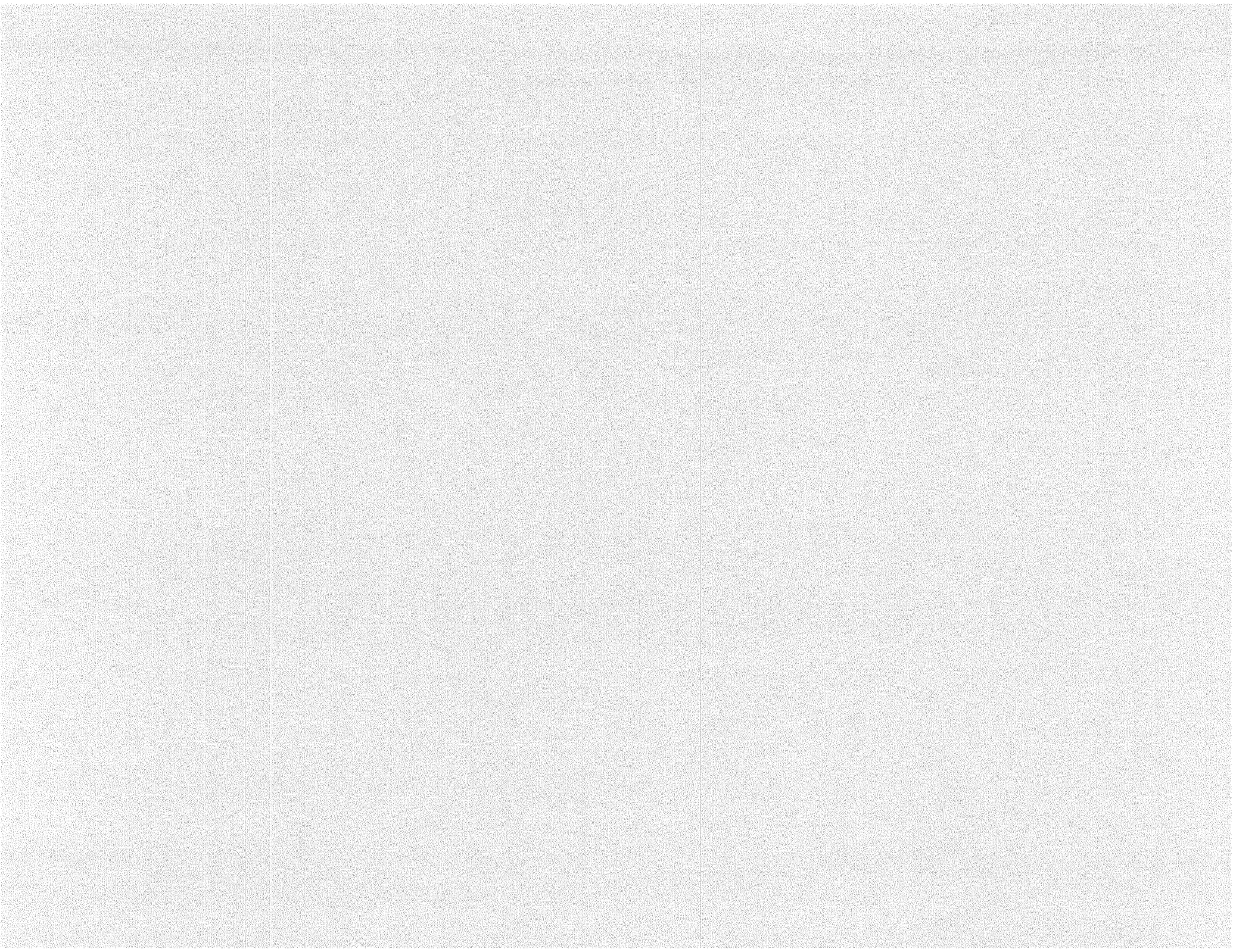
Exhibit A - The following sections of exhibit A filed November 25, 1988:

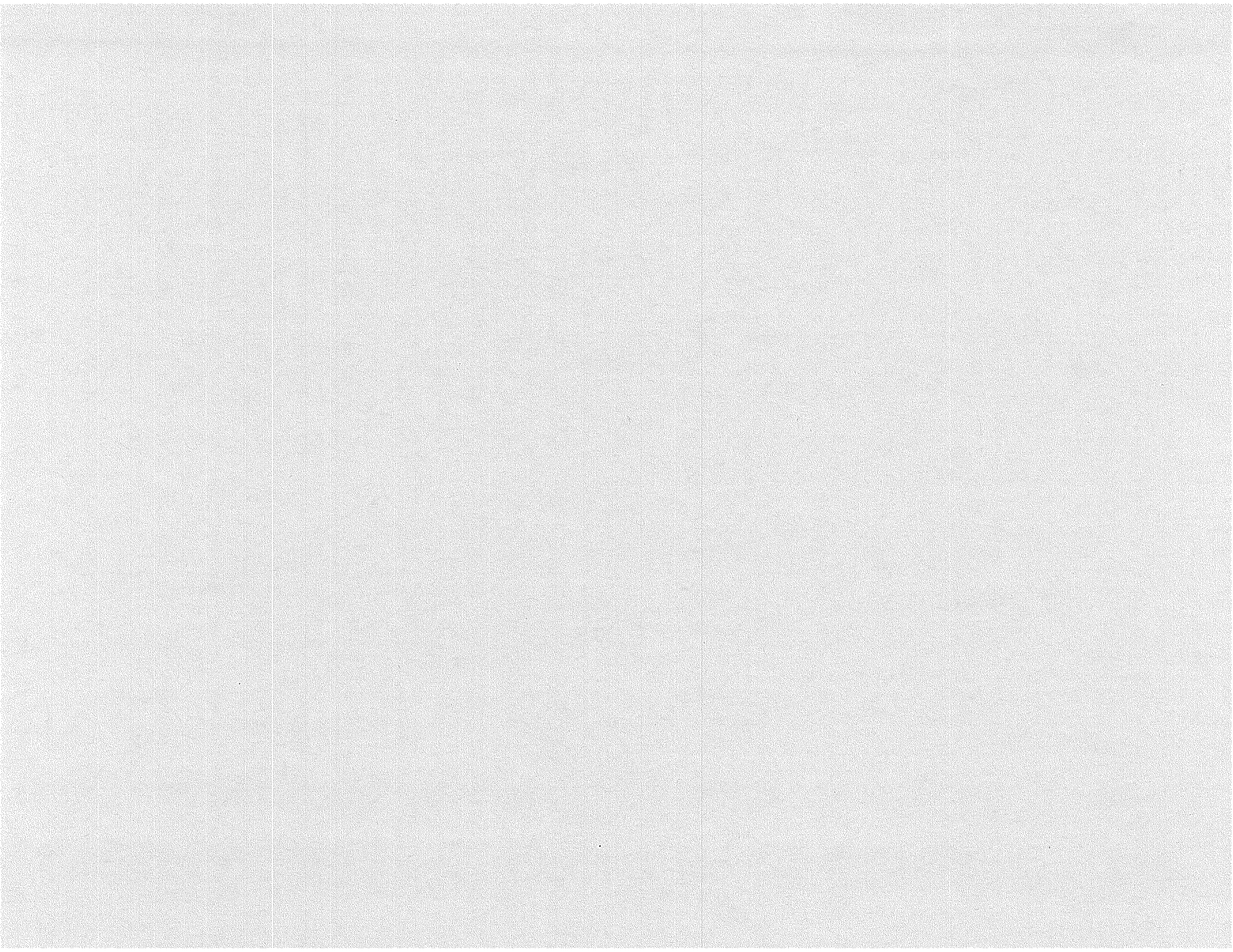
The turbine and generator description on page A-2; the transmission line description on pages A-2 and A-3, as corrected by letter dated April 10, 1989; and the additional mechanical and electrical equipment description on pages A-1 through A-7.

<i>Exhibit</i>	<i>FERC No.</i>	<i>Showing</i>
F-1	2775-3	Site Plan
F-2	2775-4	Powerhouse Plan and Elevation

Preparers

Ronald E. Spath, Civil Engineer
C. Frank Miller, Electrical Engineer





[¶ 62,297]**Linweave, Inc., Project No. 2775-001 - Massachusetts****Order Issuing New License (Minor Project)****(Issued June 29, 1989)****Fred E. Springer, Director, Office of Hydropower Licensing.**

Linweave, Inc. has filed a license application under Part I of the Federal Power Act (Act) to continue to operate and maintain the Gill Mill (D Wheel) Project, located on the Holyoke Canal, in Hampden County, Massachusetts. The hydroelectric facilities located along the Holyoke Canal system affect navigable waters of the United States.¹ The license for the project, which was issued on July 19, 1977 [59 FPC 736], with an effective date of March 1, 1941, expires on February 28, 1991. The existing license waived section 15 of the Act only as it relates to federal takeover.

Notice of the application has been published. No protests were filed in this proceeding, and

no agency objected to issuance of this license. Comments received from interested agencies and individuals have been fully considered in determining whether to issue this license. Motions to intervene were filed by the City of Holyoke Gas & Electric Department and the Holyoke Water Power Company (HWP) in order to be parties in this proceeding. HWP also requests that any license issued which utilizes HWP's Holyoke Canal System water be conditioned, as was the previous license, to require cooperation with HWP as the licensee for the Hadley Falls Project No. 2004. Article 202 is included to provide for appropriate cooperation.

¹ See 33 FPC 593, 594 (1965).

Comprehensive Development

Sections 4(e) and 10(a)(1) of the Act require the Commission to consider and balance in the public interest all uses of the waterway on which a project is proposed to be located.

The Gill Mill (D Wheel) Project has operated under the terms of its existing license since 1977. In the environmental assessment (EA), the staff analyzed the environmental effects of the continued operation of the project. Neither the resource agencies nor staff identified any significant conflicts between continued operation of the project as proposed by the applicant, and the environmental values of the project area.

Three alternatives to relicensing the Gill Mill (D Wheel) Project were also considered by the staff in its EA. They include: (1) issuance of an annual license; (2) issuance of a non-power license; and (3) denial of a license application. No alternative was identified that would have a higher or better use of the project in terms of providing power and environmental benefits without significant environmental cost.

Section 10(a)(2) of the Act also requires the Commission to consider the extent to which a proposed project is consistent with an existing federal, state, or local comprehensive plan. Under section 10(a)(2), federal, and state agencies filed seven comprehensive plans that address resources in Massachusetts. Of these plans, staff identified and reviewed four plans relevant to this project.² No conflicts between the proposed Gill Mill (D Wheel) Project and these four plans were found.

Therefore, the project as conditioned is determined to be best adapted to a comprehensive plan, pursuant to Section 10(a) of the Act, for improving a waterway and would provide for adequate protection, mitigation, and enhancement of fish and wildlife pursuant to Section 10(j) of the Act.

Recommendations of Federal and State Fish and Wildlife Agencies

Section 10(j) of the Act requires the Commission to include license conditions, based on recommendations of federal and state fish and wildlife agencies, for the protection, mitigation, and enhancement of fish and wildlife. The environmental assessment for the Gill Mill (D Wheel) Project addresses the concerns of the federal and state fish and wildlife agencies;

however, recommendations are not needed for continued operation of the project.

ECPA Findings

Section 10(a)(2)(C) and section 15(a) of the Federal Power Act, as amended by the Electric Consumers Protection Act of 1986 (ECPA), requires the Commission to consider in writing the following factors in issuing new licenses.

The following discussions apply individually and collectively to the eight hydro projects owned and operated by Linweave, Inc. The eight projects are identified by FERC project numbers: 2497, 2758, 2766, 2768, 2770, 2771, 2772, and 2775.

Consumption Efficiency Improvement Programs (Section 10(a)(2)(C))

Since the applicant's primary business is the manufacture of paper products and not the generation or sale of electric power, no discussion of on-going or planned conservation and load-management programs is required in this document.

The Plans and Abilities of the Applicant to Comply with the Articles, Terms, and Conditions of Any License Issued to it and Other Applicable Provisions of Part I of the Act (Section 15(a)(2)(A))

The staff has reviewed the plans of the applicant to comply with the articles, terms, and conditions of any license issued to Linweave, Inc.

A review of the compliance record of the applicant indicates that the applicant's compliance with the terms and conditions of its current license has been satisfactory. The staff concludes that the applicant has demonstrated its ability to comply in a good faith manner with all articles, terms, and conditions of the license, and the staff concludes that the applicant would perform in a competent manner if issued a new license for the project.

The Plans of the Applicant to Manage, Operate, and Maintain the Project Safely (Section 15(a)(2)(B))

The staff has reviewed the applicant's plans to manage, operate, and maintain the project safely. There is no dam within the project boundaries to operate and maintain.

² Connecticut River 1982 Water Quality Management Plan, June 1983, Massachusetts Division of Water Pollution Control; Connecticut River Basin Fish Passage, Flow, and Habitat Alteration Considerations in Relation to Anadromous Fish Restoration, October 1981, Technical Committee for Fisheries Management of the Connecticut River; The Outdoor

Heritage of Massachusetts, SCORP 1983-1988, December 1983, Massachusetts Department of Environmental Management; A Strategic Plan for the Restoration of Atlantic Salmon to the Connecticut River Basin, September 1982, Policy Committee for Fisheries Management of the Connecticut River.

The eight projects draw carefully prescribed quantities of water from the Second Level Canal and discharge it to the Connecticut River below the projects. There is a flood wall located between the eight projects and the Connecticut River that ensures protection during flood conditions. When the river elevations reach 62 feet or higher, the eight projects are shut down and the headgates and tailrace gates are closed. The City of Holyoke Department of Public Works is responsible for implementing the flood wall operation schedule and closing the tailrace gates of the eight projects.

The applicant has operated the eight projects with a perfect employee safety and public safety record. There have been no deaths or lost-time injuries to employees from project operations, nor is there any record of injury or death to the public within the project boundaries.

Based upon a review of the available information on the project safety plans, the staff concludes that the applicant is capable of managing, operating, and maintaining the project in a safe manner.

The Plans and Abilities of the Applicant to Operate and Maintain the Project in a Manner Most Likely to Provide Efficient and Reliable Electric Service (Section 15(a)(2)(C))

The staff has reviewed the operation inspection reports by the NYRO and the applicant's project operation reports.

The applicant has full time employees in its engineering department that monitor the eight projects, including physically checking each unit several times daily. Additionally, the projects have automatic safety devices to shut down the units in case of abnormal operating conditions.

The applicant cleans the trashracks and lubricates the mechanical machinery regularly. The applicant provides for periodic inspection of the penstock and provides maintenance when needed.

The applicant has reported a total of seven unscheduled outages for the eight projects over the last five years. The outages ranged in length from 48 days to 114 days during which time the equipment was repaired. The applicant has rebuilt and/or overhauled seven of the generating units since February 1979 when the applicant purchased the eight projects.

The applicant has no plans to increase generation at the eight projects. The main reason for this is that the applicant is entitled to withdraw only a carefully prescribed quantity of water from the Second Level Canal under the terms of certain indenture agreements with HWP.

The applicant is in the paper-products manufacturing business, which is a highly competitive field and is very energy-intensive. Because of the competition in the paper-products market, the applicant must operate the project in the most efficient and reliable manner to maximize electric power sales revenues available to offset power purchases for use in its paper manufacturing operations.

The staff concludes that the project is being operated in an efficient and reliable manner.

The Need of the Applicant Over the Short and Long Terms for the Electricity Produced by the Project to Serve Its Customers (Section 15(a)(2)(D))

The applicant, Linweave, Inc., is a manufacturer of paper products and, as such, does not sell any of the electrical output of the eight hydroelectric projects (which it owns and operates as the current licensee) to end-use customers. Therefore, this document does not address the applicant's need for the electricity generated by the eight projects to serve its customers. The paper-products manufacturing business is today a highly competitive industry. Production costs in this industry are very energy intensive, due to the large amounts of electric energy used for the manufacture of paper. When deprived of a low-cost source (or sources) of electric energy, a paper manufacturer cannot survive in the market place for paper products.

All eight of the hydropower projects for which the applicant is applying for new licenses are operated in the run-of-the-river mode; and, as a result, the capacity and energy produced by them depend upon the available streamflow provided by the Second Level Canal of the Holyoke Water Power Company. This flow is subject to seasonal and yearly variations. The applicant's electric power demands at the several paper mills are determined by factors which are in no way correlated with water flow in the canal system. Because of this, and for other reasons affecting the applicant's paper-making electrical energy costs, Linweave has found it to be economically advantageous to sell the output of the eight projects to a local electric utility and purchase the power required by the Linweave paper mills.

The total net electrical output from all eight of the projects is currently being sold, and is expected to continue to be sold to Fitchburg Gas and Electric Light Company, pursuant to a power sales agreement dated March 25, 1982.

The applicant's present and future need for the electric power produced by the eight hydro projects, with which this document is concerned, can be stated in few words: revenues

received from the sale of project capacity and energy are used to offset the cost of capacity and energy purchased on an "as-needed, total requirements" purchase agreement with a local utility, thus improving Linweave's competitive position in the paper products marketplace, which may prove necessary for industrial survival.

The total installed capacity of the eight hydro projects is 3.362 megawatts, and the applicant estimates that the projects are capable of producing an average of 16,997 megawatthours of energy annually.

The staff concludes that there is a need for the project power over the short and the long term.

The Existing and Planned Transmission Services of the Applicant (Section 15(a)(2)(E))

If the applicant is issued new licenses for the eight hydro projects listed above, no changes of the existing transmission system, its operation, or operating characteristics would occur as a result thereof, and none are planned.

If new licenses are denied, the transmission system, or systems associated with the eight projects, would no longer be required, since the applicant would no longer generate power to sell. The applicant would continue to purchase "all requirements" power required for the operation of the paper mills from a local utility. Transmission would not be affected by denial of the licenses.

The staff concludes that the transmission services are adequate as they currently exist.

Whether the Plans of the Applicant will be Achieved, to the Greatest Extent Possible, in a Cost Effective Manner (Section 15(a)(2)(F))

The Gill Mill was constructed in 1880 and the present hydroelectric generating unit rebuilt in 1983. No new construction is proposed. The annual cost of operating the project would be its annual operation and maintenance costs. Continued future project operation would serve to provide an economically efficient source of energy for Linweave, Inc. The staff concludes that the project is economically beneficial.

The Applicant's Record of Compliance with the Terms and Conditions of the Existing License (Section 15(a)(3))

The compliance records of Linweave, Inc., with the terms and conditions of its existing licenses, are satisfactory. Further, the licensee has maintained the projects in a satisfactory manner.

The licensee is reminded that failure to comply with the terms and conditions of this license will subject it to the enforcement and penalty provisions of section 31 of the Federal Power Act.

Term of License

Section 15 of the Act, as amended by ECPA specifies that any license issued under section 15 shall be for a term which the Commission determines to be in the public interest, but not less than 30 years, nor more than 50 years from the date the license is issued. This provision is similar to pre-ECPA Commission policy, which was to establish from the expiration date of the existing license, 30-year terms for those projects which proposed no new construction or capacity, 40-year terms for those projects that proposed a moderate amount of new development, and 50-year terms for those projects that proposed a substantial amount of new development.³

Linweave, Inc. proposes no modifications to the existing project facilities or change in operation of the project. However, the existing license will not expire until February 28, 1991. Accordingly, the new license for the project will be for a term of 30 years from the expiration of the existing license.

Summary of Findings

An EA was issued for this project. Background information, analysis of impacts, support for related license articles, and the basis for a finding of no significant impact on the environment are contained in the EA attached to this order. Issuance of this license is not a major federal action significantly affecting the quality of the human environment.

The design of this project is consistent with the engineering standards governing dam safety. The project will be safe if operated and maintained in accordance with the requirements of this license. Analysis of related issues is provided in the Safety and Design Assessment attached to this order.

The Director, Office of Hydropower Licensing, concludes that the project would not conflict with any planned or authorized development, and would be best adapted to comprehensive development of the waterway for beneficial public uses.

The Director orders:

(A) This license is issued to Linweave, Inc. (licensee), for a period of 30 years, effective March 1, 1991, to operate and maintain the Gill Mill (D Wheel) Project. This license is

³ See *Montana Power Company*, 56 FPC 2008 (1976).

subject to the terms and conditions of the Act, which is incorporated by reference as part of this license, and subject to the regulations the Commission issues under the provisions of the Act.

(B) The project consists of:

(1) All lands, to the extent of the licensee's interests in those lands, shown by exhibit G:

<i>Exhibit</i>	<i>FERC No.</i>	<i>Showing</i>
G-1	2775-3	Project Location

(2) Project works consisting of: (a) a gated intake with submerged trashracks located on the second level canal of the Holyoke Water Power Company; (b) a 12-foot-diameter penstock 295 feet long; (c) a 450-kW generating unit located within the Gill Mill building; (d) two parallel 7-foot-wide by 10-foot-high arched brick-lined tailrace tunnels extending from the draft tube to an existing outlet structure; (e) a concrete gated outlet structure where tailwater empties into a channel that leads to the Connecticut River; (f) a 13.8-kV transmission line 660 feet long that connects the project to an existing transmission line; and (g) appurtenant facilities.

The project works generally described above are more specifically shown and described by those portions of exhibits A and F recommended for approval in the attached Safety and Design Assessment.

(3) All of the structures, fixtures, equipment or facilities used to operate or maintain the project, all portable property that may be employed in connection with the project and all riparian or other rights that are necessary or appropriate in the operation or maintenance of the project.

(C) The exhibit G described above and those sections of exhibits A and F recommended for approval in the attached Safety and Design Assessment are approved and made part of the license.

(D) The following sections of the Act are waived and excluded from the license for this minor project:

4(b), except the second sentence; 4(e), insofar as it relates to approval of plans by the Chief of Engineers and the Secretary of the Army; 6, insofar as it relates to public notice and to the acceptance and expression in the license of terms and conditions of the Act that are waived here; 10(c), insofar as it relates to depreciation reserves; 10(d); 10(f); 14, except insofar as the power of condemnation is reserved; 15; 16; 19; 20; and 22.

(E) This license is subject to the articles set forth in Form L-9 (October 1975) [reported at 54 FPC-1852], entitled "Terms and Conditions of License for Constructed Minor Project

Affecting Navigable Waters of the United States", and the following additional articles:

Article 201. The licensee shall pay the United States the following annual charge, effective March 1, 1991:

For the purpose of reimbursing the United States for the cost of administration of Part I of the Act, a reasonable amount as determined in accordance with the provisions of the Commission's regulations in effect from time to time. The authorized installed capacity for that purpose is 600 horsepower.

Article 202. The Licensee shall cooperate with the licensee for Project No. 2004 in order that the conditions of Article 16 of the license for Project No. 2004 can be fulfilled.

Article 401. Authority is reserved to the Commission to require the licensee to construct, operate, and maintain, or provide for the construction, operation, and maintenance of such fishways, as may be prescribed by the Secretary of the Interior pursuant to section 18 of the Federal Power Act.

Article 402. (a) In accordance with the provisions of this article, the licensee shall have the authority to grant permission for certain types of use and occupancy of project lands and waters and to convey certain interests in project lands and waters for certain types of use and occupancy, without prior Commission approval. The licensee may exercise the authority only if the proposed use and occupancy is consistent with the purposes of protecting and enhancing the scenic, recreational, and other environmental values of the project. For those purposes, the licensee shall also have continuing responsibility to supervise and control the use and occupancies for which it grants permission, and to monitor the use of, and ensure compliance with the covenants of the instrument of conveyance for, any interests that it has conveyed, under this article. If a permitted use and occupancy violates any condition of this article or any other condition imposed by the licensee for protection and enhancement of the project's scenic, recreational, or other environmental values, or if a covenant of a conveyance made under the authority of this article is violated, the licensee shall take any lawful action necessary to correct the violation. For a permitted use or occupancy, that action includes, if necessary, cancelling the permission to use and occupy the project lands and waters and requiring the removal of any non-complying structures and facilities.

(b) The type of use and occupancy of project lands and water for which the licensee may grant permission without prior Commission approval are: (1) landscape plantings; (2) non-commercial piers, landings, boat docks, or similar structures and facilities that can accommo-

date no more than 10 watercraft at a time and where said facility is intended to serve single-family type dwellings; and (3) embankments, bulkheads, retaining walls, or similar structures for erosion control to protect the existing shoreline. To the extent feasible and desirable to protect and enhance the project's scenic, recreational, and other environmental values, the licensee shall require multiple use and occupancy of facilities for access to project lands or waters. The licensee shall also ensure, to the satisfaction of the Commission's authorized representative, that the use and occupancies for which it grants permission are maintained in good repair and comply with applicable state and local health and safety requirements. Before granting permission for construction of bulkheads or retaining walls, the licensee shall: (1) inspect the site of the proposed construction, (2) consider whether the planting of vegetation or the use of riprap would be adequate to control erosion at the site, and (3) determine that the proposed construction is needed and would not change the basic contour of the reservoir shoreline. To implement this paragraph (b), the licensee may, among other things, establish a program for issuing permits for the specified types of use and occupancy of project lands and waters, which may be subject to the payment of a reasonable fee to cover the licensee's costs of administering the permit program. The Commission reserves the right to require the licensee to file a description of its standards, guidelines, and procedures for implementing this paragraph (b) and to require modification of those standards, guidelines, or procedures.

(c) The licensee may convey easements or rights-of-way across, or leases of, project lands for: (1) replacement, expansion, realignment, or maintenance of bridges and roads for which all necessary state and federal approvals have been obtained; (2) storm drains and water mains; (3) sewers that do not discharge into project waters; (4) minor access roads; (5) telephone, gas, and electric utility distribution lines; (6) non-project overhead electric transmission lines that do not require erection of support structures within the project boundary; (7) submarine, overhead, or underground major telephone distribution cables or major electric distribution lines (69-kV or less); and (8) water intake or pumping facilities that do not extract more than one million gallons per day from a project reservoir. No later than January 31 of each year, the licensee shall file three copies of a report briefly describing for each conveyance made under this paragraph (c) during the prior calendar year, the type of interest conveyed, the location of the lands subject to the conveyance, and the nature of the use for which the interest was conveyed.

(d) The licensee may convey fee title to, easements or rights-of-way across, or leases of project lands for: (1) construction of new bridges or roads for which all necessary state and federal approvals have been obtained; (2) sewer or effluent lines that discharge into project waters, for which all necessary federal and state water quality certification or permits have been obtained; (3) other pipelines that cross project lands or waters but do not discharge into project waters; (4) non-project overhead electric transmission lines that require erection of support structures within the project boundary, for which all necessary federal and state approvals have been obtained; (5) private or public marinas that can accommodate no more than 10 watercraft at a time and are located at least one-half mile from any other private or public marina; (6) recreational development consistent with an approved Exhibit R or approved report on recreational resources of an Exhibit E; and (7) other uses, if: (i) the amount of land conveyed for a particular use is five acres or less; (ii) all of the land conveyed is located at least 75 feet, measured horizontally, from the edge of the project reservoir at normal maximum surface elevation; and (iii) no more than 50 total acres of project lands for each project development are conveyed under this clause (d)(7) in any calendar year. At least 45 days before conveying any interest in project lands under this paragraph (d), the licensee must submit a letter to the Director, Office of Hydropower Licensing, stating its intent to convey the interest and briefly describing the type of interest and location of the lands to be conveyed (a marked exhibit G or K map may be used), the nature of the proposed use, the identity of any federal or state agency official consulted, and any federal or state approvals required for the proposed use. Unless the Director, within 45 days from the filing date, requires the licensee to file an application for prior approval, the licensee may convey the intended interest at the end of that period.

(e) The following additional conditions apply to any intended conveyance under paragraph (c) or (d) of this article:

(1) Before conveying the interest, the licensee shall consult with federal and state fish and wildlife or recreation agencies, as appropriate, and the State Historic Preservation Officer.

(2) Before conveying the interest, the licensee shall determine that the proposed use of the lands to be conveyed is not inconsistent with any approved exhibit R or approved report on recreational resources of an exhibit E; or, if the project does not have an approved exhibit R or approved report on recreational resources, that

the lands to be conveyed do not have recreational value.

(3) The instrument of conveyance must include covenants running with the land adequate to ensure that: (i) the use of the lands conveyed shall not endanger health, create a nuisance, or otherwise be incompatible with overall project recreational use; and (ii) the grantee shall take all reasonable precautions to insure that the construction, operation, and maintenance of structures or facilities on the conveyed lands will occur in a manner that will protect the scenic, recreational, and environmental values of the project.

(4) The Commission reserves the right to require the licensee to take reasonable remedial action to correct any violation of the terms and conditions of this article, for the protection and enhancement of the project's scenic, recreational, and other environmental values.

(f) The conveyance of an interest in project lands under this article does not in itself change the project boundaries. The project boundaries may be changed to exclude land conveyed under this article only upon approval of revised exhibit G or K drawings (project boundary maps) reflecting exclusion of that land. Lands conveyed under this article will be excluded from the project only upon a determination that the lands are not necessary for project purposes, such as operation and maintenance, flowage, recreation, public access, protection of environmental resources, and shoreline control, including shoreline aesthetic values. Absent extraordinary circumstances, proposals to exclude lands conveyed under this article from the project shall be consolidated for consideration when revised exhibit G or K drawings would be filed for approval for other purposes.

(g) The authority granted to the licensee under this article shall not apply to any part of the public lands and reservations of the United States included within the project boundary.

(F) The licensee shall serve copies of any Commission filing required by this order on any entity specified in this order to be consulted on matters related to that filing. Proof of service on these entities must accompany the filing with the Commission.

(G) This order is issued under authority delegated to the Director and is final unless appealed to the Commission by any party within 30 days from the issuance date of this order. Filing an appeal does not stay the effective date of this order or any date specified in

this order. The licensee's failure to appeal this order shall constitute acceptance of the license.

Environmental Assessment¹

Federal Energy Regulatory Commission
Office of Hydropower Licensing
Division of Project Review

Date: June 16, 1989

Project name: Gill Mill, D Wheel, Hydroelectric Project

FERC Project No. 2775-001

A. Application

1. Application type: New minor license
2. Date filed with the Commission: November 25, 1988
3. Applicant: Linweave, Inc.
4. Water body: Holyoke Canal; River basin: Connecticut
5. Nearest city or town: Holyoke (See figure 1.)
6. County: Hampden; State: Massachusetts

B. Purpose and Need for Action

1. Purpose.

Linweave estimates the average annual energy generation of the Gill Mill, D Wheel, Hydroelectric Project is 1,790 megawatt-hours. Project power is sold to the Fitchburg Gas and Electric Light Company.

2. Need for power.

The power from the project is useful in meeting a small part of the need for power projected for the New England Power Pool area of the Northeast Power Coordinating Council (NPCC) region. Power generated at the project displaces fossil-fueled power generation in the NPCC region, thus conserving nonrenewable fossil fuels and reducing the emission of noxious byproducts caused by the combustion of fossil fuels.

C. Proposed Project and Alternatives

1. Description of the proposed action. (See figure 2.)

The existing operating project was issued an initial license in 1977, which will expire in 1991. The licensee has filed for a new license for the continued operation of the project. The existing operating project consists of: (i) a gated intake with submerged trashracks located on the second level canal of the Holyoke Water Power Company; (ii) a 12-foot-

¹ Figures and attachments referenced in the text are omitted from this document due to reproduction requirements.

diameter penstock 295 feet long; (iii) an existing 450-kW generating unit located within the Gill Mill building; (iv) two parallel 7-foot-wide by 10-foot-high arched brick-lined tailrace tunnels extending from the draft tube to an existing outlet structure; (v) a concrete gated outlet structure where tailwater empties into a channel that leads to the Connecticut River; (vi) a 13.8-kV transmission line 660 feet long that connects the project to an existing transmission line; and (vii) appurtenant facilities. The project operates in a run-of-river mode. Linweave does not propose any construction or change in project operation. The Holyoke Water Power Company controls flows from the Connecticut River into the canal system under a FERC major license granted to Project No. 2004.

2. Applicant's proposed mitigative measures.

Since Linweave proposes to continue operating the project as in the past, with no new construction, no changes to the hydroelectric project, and no changes in the use and release of water, Linweave proposes no mitigative measures.

3. Federal lands affected.

No.

4. Alternatives to the proposed project.

a. *Issuance of an annual license.* Section 15(a) of the Federal Power Act (Act), 16 U.S.C. § 808(a), provides for the issuance of annual licenses to the prior licensee if the license expires pending the relicensing determination. Under this alternative, an annual license would continue to be issued to Linweave until a new license is issued. The annual license contains the same terms as the expired license, thereby maintaining the status quo.

b. *Issuance of a non-power license.* Section 15(f) of the Act, § 808(b), authorizes the Commission to issue a license for nonpower use when the Commission "finds that in conformity with a comprehensive plan for improving or developing a waterway or waterways for beneficial public uses all or part of any licensed project should no longer be used or adapted for use for power purposes." A license that is granted by the Commission for nonpower use is temporary. When the Commission finds that a state, municipality, interstate agency, or another federal agency is authorized and willing to assume regulatory supervision of the lands and facilities included under the nonpower license and does so, the Commission shall thereupon terminate the nonpower license.

c. *Denial of the license application.* Denial of the license application could lead to removal of the power facilities and removal of all project works.

D. Consultation and Compliance

1. Fish and wildlife agency consultation (Fish & Wildlife Coordination Act).

- a. U.S. Fish & Wildlife Service: Yes.
- b. State(s): Yes.
- c. National Marine Fisheries Service: Yes.

2. Section 7 consultation (Endangered Species Act).

- a. Listed species: Present.
- b. Consultation: Not required.

Remarks: The federally listed endangered shortnose sturgeon under the jurisdiction of the National Marine Fisheries Service (NMFS) inhabits the lower segment of the Connecticut River from the river's mouth upstream to the Holyoke dam. A small landlocked population is found in the pool above the Holyoke dam (Taubert, 1980). Dadswell, *et al.* (1984) estimated that between 800 and 1000 shortnose sturgeon inhabit the lower portion (below Holyoke) of the Connecticut River. The NMFS reports that due to the trashrack spacing, any sturgeon which might enter the canal would be prevented from entrainment into the project (personal communication, Chris Mantzaris, staff, National Marine Fisheries Service, Gloucester, Massachusetts, June 13, 1989).

3. Section 401 certification (Clean Water Act).

Required; applicant requested certification on 10/17/88.

Status: Granted by the certifying agency on 03/30/89.

4. Cultural resource consultation (Historic Preservation Act).

- a. State Historic Preservation Officer: Yes.
- b. National Park Service: Yes.
- c. *National Register* status: Eligible or listed.
- d. Council: Not required.
- e. Further consultation: Not required.

Remarks: The project is adjacent to the Holyoke Canal System, a property listed in the *National Register of Historic Places*. Since there would be no redevelopment, new construction, or changes to the exterior of the property, the project would not affect the canal system or any other *National Register* or eligible properties. The SHPO concurs with this finding (letter from Valerie A. Talmage, Executive Director, Massachusetts Historical Commission, and State Historic Preservation Officer, Boston, Massachusetts, December 9, 1988).

5. Recreational consultation (Federal Power Act).

- a. U.S. Owners: No.
- b. National Park Service: Yes.

c. State(s): Yes.

6. Wild and scenic rivers (Wild and Scenic Rivers Act).

Status: None.

7. Land and Water Conservation Fund lands and facilities (Land and Water Conservation Fund Act).

Status: None.

E. Comments

1. The following agencies and entities provided comments on the application or filed a motion to intervene in response to the public notice dated 03/24/89.

<i>Commenting agencies and other entities</i>	<i>Date of letter</i>
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Department of the Army, New England Division Corps of Engineers	05/11/89
Environmental Protection Agency	05/17/89
Department of the Interior	05/19/89
Massachusetts Division of Fisheries and Wildlife	05/30/89

<i>Motions to intervene</i>	<i>Date of motion</i>
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City of Holyoke, Gas and Electric Department	03/28/89
Holyoke Water Power Company	05/24/89

2. The applicant did not respond to the comments or motion(s) to intervene.

F. Affected Environment

1. General description of the locale. (See figure 3.)

a. Description of the Connecticut River Basin.

The Connecticut River Basin, with a drainage area of 11,765 square miles, is the largest river basin in New England. Extending from the northernmost part of New Hampshire to Long Island Sound, the river basin has a maximum length in a north-south direction of about 280 miles and a maximum width of about 62 miles. The total drainage area of the basin is 11,765 square miles. The principal tributaries to the mainstem Connecticut River, by state, are the Passumpsic, White, West, Ottawaquchee, and Black Rivers in Vermont; the Ammonoosuc, Mascoma, Ashuelot, and Sugar Rivers in New Hampshire; the Millers, Deerfield, Chicopee, and Westfield Rivers in Massachusetts; and the Farmington River in Connecticut.

This complex of rivers and tributaries constitutes one of the most extensively developed hydropower systems in the U.S. There is now a major effort by federal, state, and private sectors to restore Atlantic salmon to the Connecticut River Basin.

The project is located in a heavily industrialized setting between the second level of the Holyoke Canal system and the Connecticut River. The climate is typical of inland Connecticut and Massachusetts with an average temperature of 49.8 degrees Fahrenheit and an average annual precipitation of 44.39 inches.

b. Licensed and exempted projects.

There are 62 existing licensed projects and 38 exempted projects in the Connecticut River Basin, as of June 1, 1989.

c. Pending applications.

There are 10 pending license applications in the Connecticut River Basin, as of June 1, 1989.

d. Cumulative impacts.

Cumulative impacts are defined as impacts on the environment that result from the incremental impacts of an action when added to other past, present, and reasonably foreseeable future actions regardless which agency or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (40 C.F.R., Part 1508.7).

A target resource is an important resource that may be cumulatively affected by multiple development within a basin. The staff identified Atlantic salmon as the target resource in the Connecticut River Basin (Federal Energy Regulatory Commission, 1986). The selection was based on the regional significance and geographic distribution of this species within the river basin. This anadromous fishery resource is described below in section F(2d). Impacts to Atlantic salmon are discussed in section G.

2. Descriptions of the resources in the project impact area (Source: Linweave, Inc., application, exhibit E, unless otherwise indicated).

a. *Geology and soils*: Bedrock in the project area is interbedded sandstone, shale, conglomerate, and basaltic lava. The glacial till deposits that lie on the glaciated surface of the bedrock are overlain by varied glacial lake deposits. The original dry, sandy, surface soils in the project area have been highly altered by construction of the project and by fill and construction activities associated with urban development of the area.

b. *Streamflow*: Water flow in the canal system is controlled at the canal gatehouse in order to supply necessary water to various hydropower and industrial facilities along the

canal. The amount of flow entering the canal system ranges from no flow, when the gate-house is shut down, to 5,155 cubic feet per second, which is the maximum hydraulic capacity of the canal.

c. *Water quality:* The Connecticut River upstream of Holyoke dam is classified as Class B water by the Massachusetts Division of Water Pollution. Class B water is suitable for primary and secondary contact recreation and fish and wildlife resources. Class B water must have dissolved oxygen (DO) levels greater than 5.0 milligrams per liter (mg/l) and a pH between 6.5 and 8.0. The first level canal is classified as Class C. Class C water is suitable for secondary contact recreation and fish and wildlife resources and must have a DO level greater than 5.0 mg/l and a pH between 6.5 and 9.0 standard units. Water in the project area conforms to the state water quality standards.

d. *Fisheries:*

Anadromous: Present.

Anadromous fish species found in the Connecticut River in the vicinity of the project include American shad, Atlantic salmon, blueback herring, sea lamprey, striped bass, shortnose sturgeon, and American eel (catadromous).

Resident: Present.

Resident fish species found in the Connecticut River in the vicinity of the project include carp, channel catfish, smallmouth bass, largemouth bass, spottail shiner, white perch, bluegill, rainbow trout, and brown trout.

e. *Vegetation:* Dominant vegetative species in the vicinity of the project include oak, maple, white pine, pitch pine, grasses, and ornamental shrubs.

f. *Wildlife:* Undeveloped land in the project area provides habitat for the gray squirrel, eastern cottontail rabbit, raccoon, muskrat, beaver, weasel, pheasant, and small field mammals (mice and voles). The industrial area is inhabited by English sparrows, starlings, robins, mockingbirds, Norway rats, raccoons, and eastern cottontail rabbits.

g. *Cultural:*

There are properties listed on, or eligible for listing on, the *National Register of Historic Places* in the project impact area.

Description: The Holyoke Canal System, a contributing element in the Holyoke Canal Historic District, is listed on the *National Register of Historic Places* and is within the area of the project's potential environmental impact. The portion of the canal in the project area was constructed between 1854 and 1857.

h. *Visual quality:* The project is in an industrial area. Its appearance is consistent with that of the surrounding buildings and structures.

i. *Recreation:* The immediate project area receives no significant recreational use because of its location in a highly industrialized area. No recreational facilities are located at the project. Recreational facilities including playgrounds, swimming pools, and a skating rink are available for use within walking distance of the project. The Connecticut River in the project vicinity is used for boating and fishing.

j. *Land use:* The project is entirely within the city of Holyoke. Land in the project area is primarily used for commercial, industrial, and residential purposes. The canal system is used for generating hydroelectric power at several locations.

k. *Socioeconomics:* The socioeconomic well-being of the area is influenced by industrial and urban development.

G. *Environmental Issues and Proposed Resolutions*

There are 3 issues addressed below.

1. *Cumulative impacts on Atlantic salmon resulting from developing several hydropower projects in the Connecticut River Basin:* The Atlantic salmon is currently a primary target species for a major federal, state, and private sector restoration effort. The goal of the restoration program is to provide and to maintain a sport fishery for Atlantic salmon in the Connecticut River, and to restore and maintain a spawning population in selected tributaries (Federal Energy Regulatory Commission, 1986).

Seaward migrating salmon smolts in the river basin pass numerous hydropower developments where they may become entrained and impinged. The more hydropower facilities outmigrating fish have to pass, the greater the fish losses. Among these hydropower facilities are the Holyoke dam and the canal system.

When river discharges are high and water is flowing over the dam, migrating fish pass downstream with little or no delay (Northeast Utilities Service Company, 1984). On the other hand, outmigrating fish would be entrained into the canal system by high flows entering the canal if they arrive at the dam when flashboards, permitting little or no spillage, are in place. Once in the canal, escape is very difficult. Fish can then be entrained in the turbines of hydropower plants operating along the canal.

On February 26, 1988, the Commission ordered the Holyoke Water Power Company (HWPC) to spill water over Holyoke dam when

salmon smolts are migrating downstream (Federal Energy Regulatory Commission, 1988a). [HWPC is the licensee for the Hadley Falls Project (FERC Project No. 2004) and the entity that controls the dam and the water going into the canal.] Spilling water over the Holyoke dam allows migrating salmon smolts to pass safely downstream in the spill, instead of entering the canal system.

Canal users and the HWPC have since implemented an economic dispatch agreement, in which the HWPC passes all flow downstream at the Holyoke dam and sells the users electricity, instead of water, when salmon smolts are migrating downstream. Linweave participates in this agreement. This arrangement prevents flow from entering the canal and attracting outmigrating Atlantic salmon, and minimizes the number of outmigrating Atlantic salmon trapped in the canal, and the number of project-related impacts to fish in the river basin.

Continuing to operate the Gill Mill, D Wheel, Hydroelectric Project would not contribute to cumulative adverse impacts on Atlantic salmon.

2. *Authority to prescribe fish passage facilities.* The Department of the Interior states that fish passage facilities may be needed at the project in the future, and, by letter of May 24, 1989 they reserve the authority to prescribe such fish facilities. The Commission reserves authority to require the licensee to provide fishways, as may be prescribed by the Secretary of Interior pursuant to section 18 of the Federal Power Act, if the need arises in the future.

3. *Entraining fish in the intake structure:* The Massachusetts Division of Fisheries and Wildlife (DFW) recommended the trashracks at the intake structures have a bar spacing not greater than 1 inch to prevent the entrainment of fish. The project's intake opening includes trashracks with one-inch slot width spacing between bars. The bar spacing at the existing structure satisfies the DFW's recommendation.

H. Environmental Impacts

1. Assessment of impacts expected from the applicant's proposed project (P), with the applicant's proposed mitigation and any conditions set by a federal land management agency; the proposed project with any additional mitigation recommended by the staff (Ps); and any action alternative considered (A).

FERC Reports

Assessment symbols indicate the following impact levels:

O = None; 1 = Minor;
2 = Moderate; 3 = Major;
A = Adverse; B = Beneficial;
L = Long-term; S = Short term.

Resource	P	Impact Ps	A
a. Geology-Soils	0		
b. Streamflow	0		
c. Water quality:			
Temperature	0		
Dissolved oxygen	0		
Turbidity and sedimentation	0		
d. Fisheries:			
Anadromous	0		
Resident	0		
e. Vegetation	0		
f. Wildlife	0		
g. Cultural:			
Archeological	0		
Historical	0		
h. Visual quality	0		
i. Recreation	0		
j. Land use	0		
k. Socioeconomics	0		

2. Recommended alternative (including proposed, required, and recommended mitigative measures):

Proposed project.

3. Reason(s) for selecting the preferred alternative.

The power generated at this project is produced without any known adverse environmental impacts.

I. Unavoidable Adverse Impacts of the Recommended Alternative

There are no known adverse impacts.

J. Conclusion

Finding of No Significant Impact. Approval of the recommended alternative [H(2)] would not constitute a major federal action significantly affecting the quality of the human environment; therefore, an environmental impact statement (EIS) will not be prepared.

K. Literature Cited

- Dadswell, M.J., B.D. Taubert, T.S. Squires, D. Marchette, and J.L. Buckley. 1984. Synopsis of biological data on shortnose sturgeon (*Acipenser brevirostrum*) Lesueur 1818. National Oceanic and Atmospheric Administration Technical Report NMFS 14, National Oceanic and Atmospheric Administration, Washington, D.C., 45pp.
- Linweave, Inc: 1988. Application for minor license for the Gill Mill, D Wheel, Hydroe-

lectric Project, FERC Project No. 2775, Massachusetts. November 25, 1988.

1989a. Supplement to the application for minor license for the Gill Mill, D Wheel, Hydroelectric Project, FERC Project No. 2775, Massachusetts. February 21, 1989.

1989b. Additional information for the application for minor license for the Gill Mill, D Wheel, Hydroelectric Project, FERC Project No. 2775, Massachusetts. March 20, 1989.

Northeast Utilities Service Company. 1984. Review of cancelled Atlantic salmon smolt (Salmo salar), radiotelemetry study at the Holyoke dam, Massachusetts. Hartford, Connecticut. September 1984.

Federal Energy Regulatory Commission. 1983. Planning status report for the Connecticut River Basin. Washington, DC. August 1983.

1986. Environmental assessment for the Connecticut River Basin. Washington, DC. November 7, 1986.

1988a. Order amending license for the Hadley Falls Project, FERC Project No. 2004, Massachusetts. February 26, 1988 [42 FERC ¶ 62,166].

1988b. Environmental assessment for the Number 2 Hydro Unit, FERC Project No. 2387, Holyoke, Massachusetts. August 26, 1988.

Taubert, B.D. 1980. Biology of shortnose sturgeon (*Acipenser brevirostrum*) in the Holyoke Pool, Connecticut River, Massachusetts. Ph.D. Thesis. University of Massachusetts, Amherst, 136 pp.

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Safety and Design Assessment

Gill Mill (D Wheel) Hydroelectric Project

FERC Project No. 2775-001, MA

Project Safety

The applicant for the Gill Mill (D Wheel) Project is Linweave, Inc., a manufacturer of paper products. No dam or spillway is included in the project works. All water is delivered to the project via the Holyoke Second Level Canal, which is owned and operated by the Holyoke Water Power Company (HWP).

The New York Regional Office (NYRO), in an Operation Inspection Report dated October

10, 1986, indicated that the existing project had no downstream hazard potential. Since there is no dam, the staff concludes that there are no dam safety problems.

Project Design

The existing project works consist of: (1) a gated intake with submerged trashracks located on the Second Level Canal of the HWP; (2) a 295-foot-long, 12-foot-diameter steel penstock; (3) a single runner, Francis turbine directly coupled to a 450-kilowatt (kW) Westinghouse generator; (4) two 125-foot-long, 7-foot-wide by 10-foot-high arched, brick-lined tailrace tunnels; (5) a concrete gated outlet structure where the tailwater empties into a channel that leads to the Connecticut River; and (6) appurtenant facilities. The 310-foot-long by 325-foot-wide Gill Mill building which houses the generating equipment is not considered part of the project works.

The primary transmission lines to be included in a new license for Project No. 2775 can be described as a 660-foot run of three-phase, 0.6-kilovolt (kV) overhead line extending from the 0.6-kV terminals of the project generator to the 0.6-kV terminals of the Mt. Tom step-up transformer; and a 90-foot run of three-phase, 13.8-kV overhead line extending from the 13.8-kV terminals of the Mt. Tom step-up transformer bank to the 13.8-kV substation owned by the Holyoke Water Power Company (HWP).

In addition to the primary lines, the new license should include the single-runner Francis turbine, the 450-kilowatt (kW) Westinghouse generator, all necessary switchgear, all installed electrical protection and control apparatus, and all instrumentation. No step-up transformer is included since Project No. 2775 shares the kilovoltampere (kVA) capacity of the Mt. Tom step-up transformer bank.

The applicant has proposed no new construction or improvements for the existing project; therefore, the project license does not need to include any special engineering articles.

The NYRO October 1986 Operation Inspection Report cited no deficiencies in project safety or operation. There is no dam within the project boundaries.

The staff concludes that the project would be safe and adequate if operated in conformance with the terms of a new license.

Water Resource Planning

The project works would contain one 450-kW generator directly connected to a Francis turbine. The gross head at the site ranges from 24 to 32 feet depending upon the tailwater elevation and the average head is 30 feet. The design head of the turbine is 32 feet and its

hydraulic capacity is estimated to be 161 cubic feet per second (cfs). The applicant indicated that the project generated 1,790 megawatthours (MWh) annually. The staff finds that the plant factor would be 45 percent. The project would continue to be operated manually in a run-of-river mode.

All water to the project is delivered via the Second Level Canal. The Second Level Canal is one of a series of three canals (First Level Canal, Second Level Canal, and Third Level Canal) that receives water from the Hadley Falls Project (FERC Project No. 2004) on the Connecticut River. The HWP owns and operates the Hadley Falls Project and its canal system, which delivers water to various manufacturing and other business concerns for process purposes and power generation. The applicant for the Gill Mill (D Wheel) Project is Linweave, Inc.

The water for power generation is allocated in the form of mill powers (mp) to owners of lands adjacent to the canal system, under indentures or contracts between the individual property owners and the HWP.

These "mp" quantities vary according to water flow in the Connecticut River and fall into the following three categories:

Permanent power - the amount of water sold to Linweave whenever the average daily river flows in the Connecticut River are equal to or greater than 3,100 cfs.

Surplus power - water offered for sale to owners of the so-called permanent power rights whenever average river flows in the Connecticut River are equal to or greater than 3,600 cfs.

Non-permanent power - water which is not guaranteed, but which would be furnished when there is more than a sufficient quantity of water in the river to supply all the permanent power owners together with 50 percent of it as surplus. Water would be supplied 6 days a week (but not on Sundays or holidays) when the river flows are equal to or greater than 3,865 cfs. Sunday and holiday operation is allowed when the average river flows exceed approximately 4,300 cfs.

Under the allocation terms of the indentures, Linweave is entitled, in perpetuity, to draw a carefully prescribed quantity of water from the HWP canal system for power generation and discharge it into the Connecticut River below the project. Linweave is also entitled to purchase and use such surplus water as the HWP makes available from time to time.

The Gill Mill (D Wheel) Project is authorized one type of water allocation rights based on the indentures: non-permanent. For non-permanent power allocations, the Gill Mill (D Wheel)

Project is authorized to withdraw 5.2 mp or 150 cfs. Based on the staff's flow duration curve for the Connecticut River, the applicant can withdraw 150 cfs about 87 percent of the time. Whenever the flows in the Connecticut River exceed 15,000 cfs, the applicant can withdraw the maximum hydraulic capacity of the turbine unit, which is 161 cfs, from the Second Level Canal. The staff estimates that this could occur about 31 percent of the time.

The applicant has estimated that the project operates at its maximum capacity (161 cfs) about 26 percent of the time, and at its non-permanent allocation (150 cfs) about 58 percent of the time. Based on the applicant's estimates, the project would be shut down 16 percent of the time. The NYRO 1986 Operation Inspection Report indicated that the canal system is shut down 3 times a year: once in April, once in July, and once in October. During those periods, the canal system is drained, inspected, and repaired if needed. The repairs are generally scheduled for the July shutdown.

There are certain periods of the year when the project cannot operate and the applicant is directed by the HWP to discontinue drawing water from the canal system. These periods include: (1) periods when the canal system is dewatered for inspection and maintenance; (2) periods of low flow in the Connecticut River when a public authority has required that the low flows be released at the Hadley Falls Project rather than through the canals according to the indentures, without generating power; and (3) periods when a public authority requires that the waters of the Connecticut River flow through the HWP's hydroelectric generating facilities at the Hadley Falls Project rather than through the canal system according to the indentures. During the latter periods when the HWP generates power at the Hadley Falls Project rather than releases water through the canal system, the applicant is entitled to compensation in kilowatthours (in lieu of water) under the terms of the Water Use Agreement (or Economic Dispatch Agreement). In 1987, the compensation provided under the Economic Dispatch Agreement amounted to 1,545 MWh for the eight projects owned by the applicant.

The staff's independent analysis shows that the applicant makes reasonable use of its allocated water. Because of the water allocation limits of the HWP, the applicant cannot develop additional potential at the site. Hence, the staff concludes that the applicant has properly developed the head and hydraulic potential of the site.

The August 1983 Planning Status Report for the Connecticut River Basin lists 19 existing hydroelectric projects, including the Gill Mill

(D Wheel) Project, which are located on the canal system owned by HWP. The applicant owns eight of these projects. The report also listed the Holyoke Project on the canal system as a potential project with an installed capacity of 1,222 MW and an annual generation of 13,165 MWh. The report did not indicate any proposed project on the canal system that would be in conflict with the Gill Mill (D Wheel) Project.

The staff's review of the state and federal agency comments and of seven comprehensive resource development plans identified no plans with which the existing project would be in conflict within this reach of the Second Level Canal. The staff presently has no specific comments or recommendations from reviewing agencies addressing flood control, navigation, or water supply requirements for the Second Level Canal. No competing applications for the project are currently pending before the Commission.

The City of Holyoke, Massachusetts Gas and Electric Department, and the HWP filed petitions to intervene in the licensing proceeding. Neither party opposes the issuance of a license, but each want to protect its interests. The HWP submitted a series of technical comments correcting certain information in the application. None of the corrections affect this report.

The generation from this project is equivalent to generation produced from burning 2,940 barrels of oil or 830 tons of coal annually in a steam-electric plant.

In summary, the staff's analysis shows that the existing project is properly designed to develop the hydropower potential of the site.

Economic Evaluation

The proposed project would be economically beneficial, so long as the projected levelized

cost is less than the levelized cost of alternative energy and capacity.

In the case of the Gill Mill (D Wheel) Project, the applicant has proposed no new construction. Hence, the levelized project costs would be the operation and maintenance costs and administrative and general costs. These costs are small compared to the value of the power.

The applicant currently sells the project power to Fitchburg Gas & Electric Light Company, pursuant to a power sales agreement dated March 25, 1982, and it would continue to do so.

The staff concludes that the existing project is economically beneficial.

Exhibits

The staff concludes that the following parts of exhibit A and the following exhibit F drawings conform to the Commission's rules and regulations. The staff therefore includes these in the license:

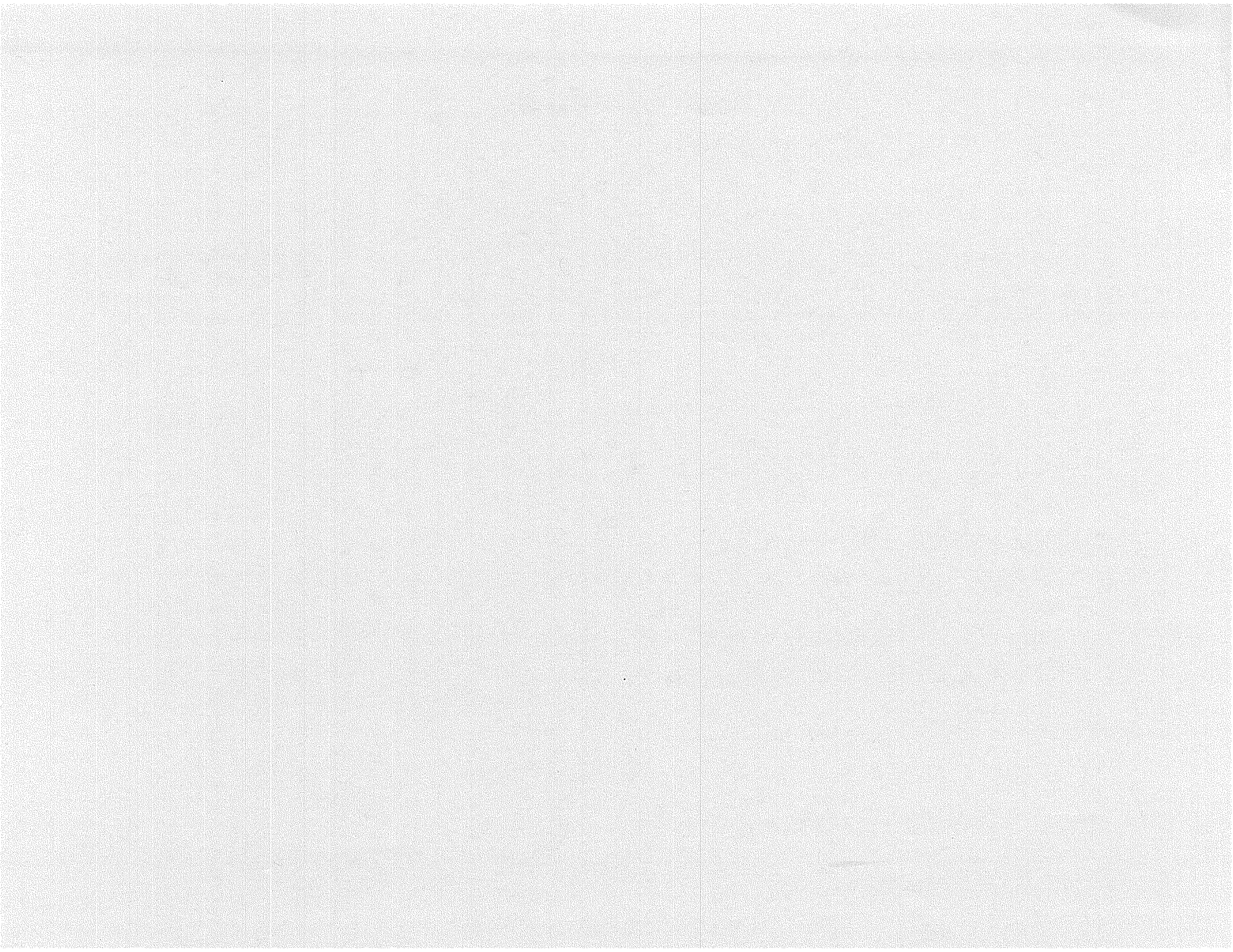
Exhibit A - The following sections of exhibit A filed November 25, 1988:

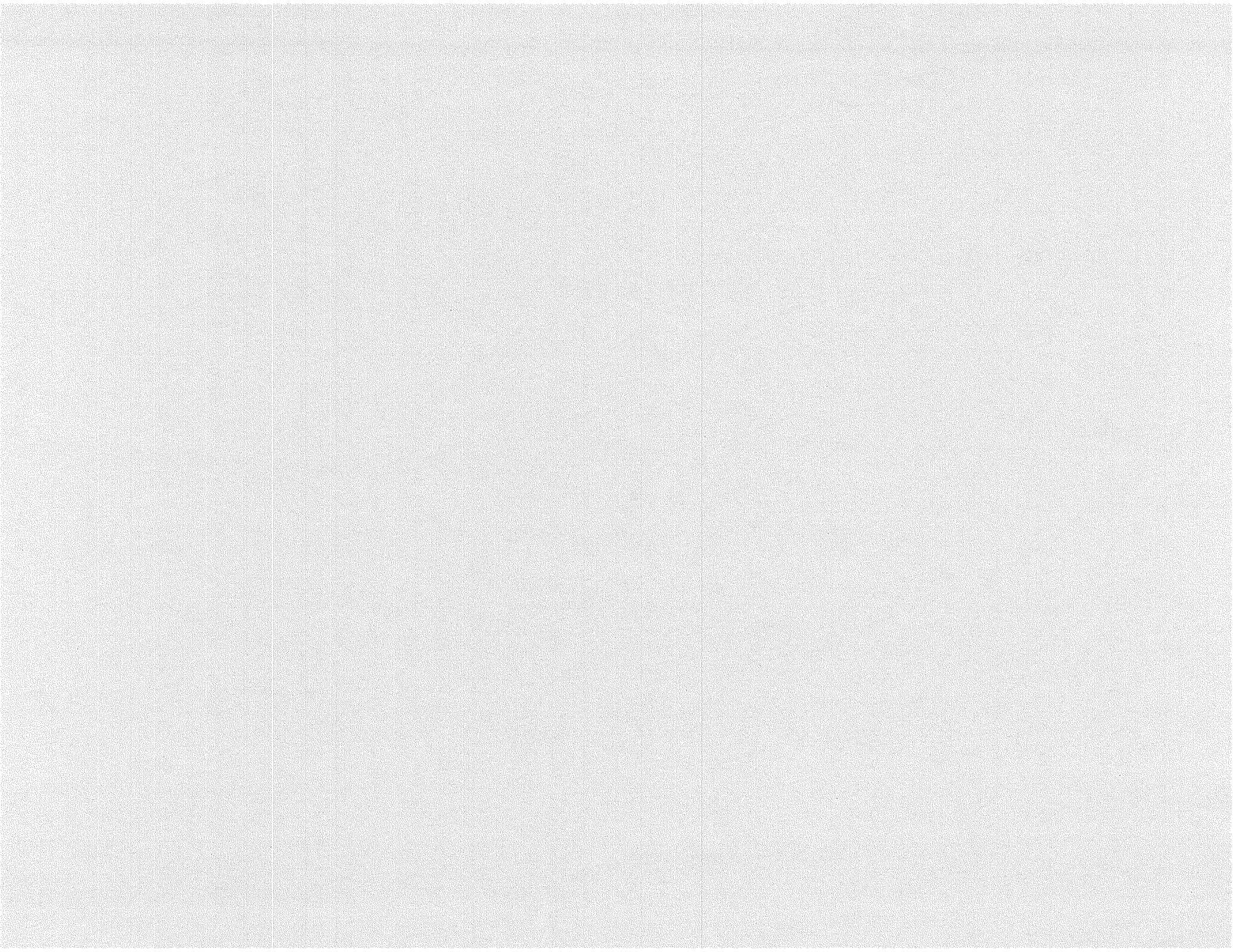
The turbine and generator description on page A-2; the transmission line description on pages A-2 and A-3, as corrected by letter dated April 10, 1989; and the additional mechanical and electrical equipment description on pages A-1 through A-7.

<i>Exhibit</i>	<i>FERC No.</i>	<i>Showing</i>
F-1	2775-3	Site Plan
F-2	2775-4	Powerhouse Plan and Elevation

Preparers

Ronald E. Spath, Civil Engineer
C. Frank Miller, Electrical Engineer





[¶ 62,297]

Linweave, Inc., Project No. 2775-001 - Massachusetts

Order Issuing New License (Minor Project)

(Issued June 29, 1989)

Fred E. Springer, Director, Office of Hydropower Licensing.

Linweave, Inc. has filed a license application under Part I of the Federal Power Act (Act) to continue to operate and maintain the Gill Mill (D Wheel) Project, located on the Holyoke Canal, in Hampden County, Massachusetts. The hydroelectric facilities located along the Holyoke Canal system affect navigable waters of the United States.¹ The license for the project, which was issued on July 19, 1977 [59 FPC 736], with an effective date of March 1, 1941, expires on February 28, 1991. The existing license waived section 15 of the Act only as it relates to federal takeover.

Notice of the application has been published. No protests were filed in this proceeding, and

no agency objected to issuance of this license. Comments received from interested agencies and individuals have been fully considered in determining whether to issue this license. Motions to intervene were filed by the City of Holyoke Gas & Electric Department and the Holyoke Water Power Company (HWP) in order to be parties in this proceeding. HWP also requests that any license issued which utilizes HWP's Holyoke Canal System water be conditioned, as was the previous license, to require cooperation with HWP as the licensee for the Hadley Falls Project No. 2004. Article 202 is included to provide for appropriate cooperation.

¹ See 33 FPC 593, 594 (1965).

Comprehensive Development

Sections 4(e) and 10(a)(1) of the Act require the Commission to consider and balance in the public interest all uses of the waterway on which a project is proposed to be located.

The Gill Mill (D Wheel) Project has operated under the terms of its existing license since 1977. In the environmental assessment (EA), the staff analyzed the environmental effects of the continued operation of the project. Neither the resource agencies nor staff identified any significant conflicts between continued operation of the project as proposed by the applicant, and the environmental values of the project area.

Three alternatives to relicensing the Gill Mill (D Wheel) Project were also considered by the staff in its EA. They include: (1) issuance of an annual license; (2) issuance of a non-power license; and (3) denial of a license application. No alternative was identified that would have a higher or better use of the project in terms of providing power and environmental benefits without significant environmental cost.

Section 10(a)(2) of the Act also requires the Commission to consider the extent to which a proposed project is consistent with an existing federal, state, or local comprehensive plan. Under section 10(a)(2), federal, and state agencies filed seven comprehensive plans that address resources in Massachusetts. Of these plans, staff identified and reviewed four plans relevant to this project.² No conflicts between the proposed Gill Mill (D Wheel) Project and these four plans were found.

Therefore, the project as conditioned is determined to be best adapted to a comprehensive plan, pursuant to Section 10(a) of the Act, for improving a waterway and would provide for adequate protection, mitigation, and enhancement of fish and wildlife pursuant to Section 10(j) of the Act.

Recommendations of Federal and State Fish and Wildlife Agencies

Section 10(j) of the Act requires the Commission to include license conditions, based on recommendations of federal and state fish and wildlife agencies, for the protection, mitigation, and enhancement of fish and wildlife. The environmental assessment for the Gill Mill (D Wheel) Project addresses the concerns of the federal and state fish and wildlife agencies;

however, recommendations are not needed for continued operation of the project.

ECPA Findings

Section 10(a)(2)(C) and section 15(a) of the Federal Power Act, as amended by the Electric Consumers Protection Act of 1986 (ECPA), requires the Commission to consider in writing the following factors in issuing new licenses.

The following discussions apply individually and collectively to the eight hydro projects owned and operated by Linweave, Inc. The eight projects are identified by FERC project numbers: 2497, 2758, 2766, 2768, 2770, 2771, 2772, and 2775.

Consumption Efficiency Improvement Programs (Section 10(a)(2)(C))

Since the applicant's primary business is the manufacture of paper products and not the generation or sale of electric power, no discussion of on-going or planned conservation and load-management programs is required in this document.

The Plans and Abilities of the Applicant to Comply with the Articles, Terms, and Conditions of Any License Issued to it and Other Applicable Provisions of Part I of the Act (Section 15(a)(2)(A))

The staff has reviewed the plans of the applicant to comply with the articles, terms, and conditions of any license issued to Linweave, Inc.

A review of the compliance record of the applicant indicates that the applicant's compliance with the terms and conditions of its current license has been satisfactory. The staff concludes that the applicant has demonstrated its ability to comply in a good faith manner with all articles, terms, and conditions of the license, and the staff concludes that the applicant would perform in a competent manner if issued a new license for the project.

The Plans of the Applicant to Manage, Operate, and Maintain the Project Safely (Section 15(a)(2)(B))

The staff has reviewed the applicant's plans to manage, operate, and maintain the project safely. There is no dam within the project boundaries to operate and maintain.

² Connecticut River 1982 Water Quality Management Plan, June 1983, Massachusetts Division of Water Pollution Control; Connecticut River Basin Fish Passage, Flow, and Habitat Alteration Considerations in Relation to Anadromous Fish Restoration, October 1981, Technical Committee for Fisheries Management of the Connecticut River; The Outdoor

Heritage of Massachusetts, SCORP 1983-1988, December 1983, Massachusetts Department of Environmental Management; A Strategic Plan for the Restoration of Atlantic Salmon to the Connecticut River Basin, September 1982, Policy Committee for Fisheries Management of the Connecticut River.

The eight projects draw carefully prescribed quantities of water from the Second Level Canal and discharge it to the Connecticut River below the projects. There is a flood wall located between the eight projects and the Connecticut River that ensures protection during flood conditions. When the river elevations reach 62 feet or higher, the eight projects are shut down and the headgates and tailrace gates are closed. The City of Holyoke Department of Public Works is responsible for implementing the flood wall operation schedule and closing the tailrace gates of the eight projects.

The applicant has operated the eight projects with a perfect employee safety and public safety record. There have been no deaths or lost-time injuries to employees from project operations, nor is there any record of injury or death to the public within the project boundaries.

Based upon a review of the available information on the project safety plans, the staff concludes that the applicant is capable of managing, operating, and maintaining the project in a safe manner.

The Plans and Abilities of the Applicant to Operate and Maintain the Project in a Manner Most Likely to Provide Efficient and Reliable Electric Service (Section 15(a)(2)(C))

The staff has reviewed the operation inspection reports by the NYRO and the applicant's project operation reports.

The applicant has full time employees in its engineering department that monitor the eight projects, including physically checking each unit several times daily. Additionally, the projects have automatic safety devices to shut down the units in case of abnormal operating conditions.

The applicant cleans the trashracks and lubricates the mechanical machinery regularly. The applicant provides for periodic inspection of the penstock and provides maintenance when needed.

The applicant has reported a total of seven unscheduled outages for the eight projects over the last five years. The outages ranged in length from 48 days to 114 days during which time the equipment was repaired. The applicant has rebuilt and/or overhauled seven of the generating units since February 1979 when the applicant purchased the eight projects.

The applicant has no plans to increase generation at the eight projects. The main reason for this is that the applicant is entitled to withdraw only a carefully prescribed quantity of water from the Second Level Canal under the terms of certain indenture agreements with HWP.

The applicant is in the paper-products manufacturing business, which is a highly competitive field and is very energy-intensive. Because of the competition in the paper-products market, the applicant must operate the project in the most efficient and reliable manner to maximize electric power sales revenues available to offset power purchases for use in its paper manufacturing operations.

The staff concludes that the project is being operated in an efficient and reliable manner.

The Need of the Applicant Over the Short and Long Terms for the Electricity Produced by the Project to Serve Its Customers (Section 15(a)(2)(D))

The applicant, Linweave, Inc., is a manufacturer of paper products and, as such, does not sell any of the electrical output of the eight hydroelectric projects (which it owns and operates as the current licensee) to end-use customers. Therefore, this document does not address the applicant's need for the electricity generated by the eight projects to serve its customers. The paper-products manufacturing business is today a highly competitive industry. Production costs in this industry are very energy intensive, due to the large amounts of electric energy used for the manufacture of paper. When deprived of a low-cost source (or sources) of electric energy, a paper manufacturer cannot survive in the market place for paper products.

All eight of the hydropower projects for which the applicant is applying for new licenses are operated in the run-of-the-river mode; and, as a result, the capacity and energy produced by them depend upon the available streamflow provided by the Second Level Canal of the Holyoke Water Power Company. This flow is subject to seasonal and yearly variations. The applicant's electric power demands at the several paper mills are determined by factors which are in no way correlated with water flow in the canal system. Because of this, and for other reasons affecting the applicant's paper-making electrical energy costs, Linweave has found it to be economically advantageous to sell the output of the eight projects to a local electric utility and purchase the power required by the Linweave paper mills.

The total net electrical output from all eight of the projects is currently being sold, and is expected to continue to be sold to Fitchburg Gas and Electric Light Company, pursuant to a power sales agreement dated March 25, 1982.

The applicant's present and future need for the electric power produced by the eight hydro projects, with which this document is concerned, can be stated in few words: revenues

received from the sale of project capacity and energy are used to offset the cost of capacity and energy purchased on an "as-needed, total requirements" purchase agreement with a local utility, thus improving Linweave's competitive position in the paper products marketplace, which may prove necessary for industrial survival.

The total installed capacity of the eight hydro projects is 3.362 megawatts, and the applicant estimates that the projects are capable of producing an average of 16,997 megawatthours of energy annually.

The staff concludes that there is a need for the project power over the short and the long term.

The Existing and Planned Transmission Services of the Applicant (Section 15(a)(2)(E))

If the applicant is issued new licenses for the eight hydro projects listed above, no changes of the existing transmission system, its operation, or operating characteristics would occur as a result thereof, and none are planned.

If new licenses are denied, the transmission system, or systems associated with the eight projects, would no longer be required, since the applicant would no longer generate power to sell. The applicant would continue to purchase "all requirements" power required for the operation of the paper mills from a local utility. Transmission would not be affected by denial of the licenses.

The staff concludes that the transmission services are adequate as they currently exist.

Whether the Plans of the Applicant will be Achieved, to the Greatest Extent Possible, in a Cost Effective Manner (Section 15(a)(2)(F))

The Gill Mill was constructed in 1880 and the present hydroelectric generating unit rebuilt in 1983. No new construction is proposed. The annual cost of operating the project would be its annual operation and maintenance costs. Continued future project operation would serve to provide an economically efficient source of energy for Linweave, Inc. The staff concludes that the project is economically beneficial.

The Applicant's Record of Compliance with the Terms and Conditions of the Existing License (Section 15(a)(3))

The compliance records of Linweave, Inc., with the terms and conditions of its existing licenses, are satisfactory. Further, the licensee has maintained the projects in a satisfactory manner.

The licensee is reminded that failure to comply with the terms and conditions of this license will subject it to the enforcement and penalty provisions of section 31 of the Federal Power Act.

Term of License

Section 15 of the Act, as amended by ECPA specifies that any license issued under section 15 shall be for a term which the Commission determines to be in the public interest, but not less than 30 years, nor more than 50 years from the date the license is issued. This provision is similar to pre-ECPA Commission policy, which was to establish from the expiration date of the existing license, 30-year terms for those projects which proposed no new construction or capacity, 40-year terms for those projects that proposed a moderate amount of new development, and 50-year terms for those projects that proposed a substantial amount of new development.³

Linweave, Inc. proposes no modifications to the existing project facilities or change in operation of the project. However, the existing license will not expire until February 28, 1991. Accordingly, the new license for the project will be for a term of 30 years from the expiration of the existing license.

Summary of Findings

An EA was issued for this project. Background information, analysis of impacts, support for related license articles, and the basis for a finding of no significant impact on the environment are contained in the EA attached to this order. Issuance of this license is not a major federal action significantly affecting the quality of the human environment.

The design of this project is consistent with the engineering standards governing dam safety. The project will be safe if operated and maintained in accordance with the requirements of this license. Analysis of related issues is provided in the Safety and Design Assessment attached to this order.

The Director, Office of Hydropower Licensing, concludes that the project would not conflict with any planned or authorized development, and would be best adapted to comprehensive development of the waterway for beneficial public uses.

The Director orders:

(A) This license is issued to Linweave, Inc. (licensee), for a period of 30 years, effective March 1, 1991, to operate and maintain the Gill Mill (D Wheel) Project. This license is

³ See *Montana Power Company*, 56 FPC 2008 (1976).

subject to the terms and conditions of the Act, which is incorporated by reference as part of this license, and subject to the regulations the Commission issues under the provisions of the Act.

(B) The project consists of:

(1) All lands, to the extent of the licensee's interests in those lands, shown by exhibit G:

Exhibit	FERC No.	Showing
G-1	2775-3	Project Location

(2) Project works consisting of: (a) a gated intake with submerged trashracks located on the second level canal of the Holyoke Water Power Company; (b) a 12-foot-diameter penstock 295 feet long; (c) a 450-kW generating unit located within the Gill Mill building; (d) two parallel 7-foot-wide by 10-foot-high arched brick-lined tailrace tunnels extending from the draft tube to an existing outlet structure; (e) a concrete gated outlet structure where tailwater empties into a channel that leads to the Connecticut River; (f) a 13.8-kV transmission line 660 feet long that connects the project to an existing transmission line; and (g) appurtenant facilities.

The project works generally described above are more specifically shown and described by those portions of exhibits A and F recommended for approval in the attached Safety and Design Assessment.

(3) All of the structures, fixtures, equipment or facilities used to operate or maintain the project, all portable property that may be employed in connection with the project and all riparian or other rights that are necessary or appropriate in the operation or maintenance of the project.

(C) The exhibit G described above and those sections of exhibits A and F recommended for approval in the attached Safety and Design Assessment are approved and made part of the license.

(D) The following sections of the Act are waived and excluded from the license for this minor project:

4(b), except the second sentence; 4(e), insofar as it relates to approval of plans by the Chief of Engineers and the Secretary of the Army; 6, insofar as it relates to public notice and to the acceptance and expression in the license of terms and conditions of the Act that are waived here; 10(c), insofar as it relates to depreciation reserves; 10(d); 10(f); 14, except insofar as the power of condemnation is reserved; 15; 16; 19; 20; and 22.

(E) This license is subject to the articles set forth in Form L-9 (October 1975) [reported at 54 FPC-1852], entitled "Terms and Conditions of License for Constructed Minor Project

Affecting Navigable Waters of the United States", and the following additional articles:

Article 201. The licensee shall pay the United States the following annual charge, effective March 1, 1991:

For the purpose of reimbursing the United States for the cost of administration of Part I of the Act, a reasonable amount as determined in accordance with the provisions of the Commission's regulations in effect from time to time. The authorized installed capacity for that purpose is 600 horsepower.

Article 202. The Licensee shall cooperate with the licensee for Project No. 2004 in order that the conditions of Article 16 of the license for Project No. 2004 can be fulfilled.

Article 401. Authority is reserved to the Commission to require the licensee to construct, operate, and maintain, or provide for the construction, operation, and maintenance of such fishways, as may be prescribed by the Secretary of the Interior pursuant to section 18 of the Federal Power Act.

Article 402. (a) In accordance with the provisions of this article, the licensee shall have the authority to grant permission for certain types of use and occupancy of project lands and waters and to convey certain interests in project lands and waters for certain types of use and occupancy, without prior Commission approval. The licensee may exercise the authority only if the proposed use and occupancy is consistent with the purposes of protecting and enhancing the scenic, recreational, and other environmental values of the project. For those purposes, the licensee shall also have continuing responsibility to supervise and control the use and occupancies for which it grants permission, and to monitor the use of, and ensure compliance with the covenants of the instrument of conveyance for, any interests that it has conveyed, under this article. If a permitted use and occupancy violates any condition of this article or any other condition imposed by the licensee for protection and enhancement of the project's scenic, recreational, or other environmental values, or if a covenant of a conveyance made under the authority of this article is violated, the licensee shall take any lawful action necessary to correct the violation. For a permitted use or occupancy, that action includes, if necessary, cancelling the permission to use and occupy the project lands and waters and requiring the removal of any non-complying structures and facilities.

(b) The type of use and occupancy of project lands and water for which the licensee may grant permission without prior Commission approval are: (1) landscape plantings; (2) non-commercial piers, landings, boat docks, or similar structures and facilities that can accommo-

date no more than 10 watercraft at a time and where said facility is intended to serve single-family type dwellings; and (3) embankments, bulkheads, retaining walls, or similar structures for erosion control to protect the existing shoreline. To the extent feasible and desirable to protect and enhance the project's scenic, recreational, and other environmental values, the licensee shall require multiple use and occupancy of facilities for access to project lands or waters. The licensee shall also ensure, to the satisfaction of the Commission's authorized representative, that the use and occupancies for which it grants permission are maintained in good repair and comply with applicable state and local health and safety requirements. Before granting permission for construction of bulkheads or retaining walls, the licensee shall: (1) inspect the site of the proposed construction, (2) consider whether the planting of vegetation or the use of riprap would be adequate to control erosion at the site, and (3) determine that the proposed construction is needed and would not change the basic contour of the reservoir shoreline. To implement this paragraph (b), the licensee may, among other things, establish a program for issuing permits for the specified types of use and occupancy of project lands and waters, which may be subject to the payment of a reasonable fee to cover the licensee's costs of administering the permit program. The Commission reserves the right to require the licensee to file a description of its standards, guidelines, and procedures for implementing this paragraph (b) and to require modification of those standards, guidelines, or procedures.

(c) The licensee may convey easements or rights-of-way across, or leases of, project lands for: (1) replacement, expansion, realignment, or maintenance of bridges and roads for which all necessary state and federal approvals have been obtained; (2) storm drains and water mains; (3) sewers that do not discharge into project waters; (4) minor access roads; (5) telephone, gas, and electric utility distribution lines; (6) non-project overhead electric transmission lines that do not require erection of support structures within the project boundary; (7) submarine, overhead, or underground major telephone distribution cables or major electric distribution lines (69-kV or less); and (8) water intake or pumping facilities that do not extract more than one million gallons per day from a project reservoir. No later than January 31 of each year, the licensee shall file three copies of a report briefly describing for each conveyance made under this paragraph (c) during the prior calendar year, the type of interest conveyed, the location of the lands subject to the conveyance, and the nature of the use for which the interest was conveyed.

(d) The licensee may convey fee title to, easements or rights-of-way across, or leases of project lands for: (1) construction of new bridges or roads for which all necessary state and federal approvals have been obtained; (2) sewer or effluent lines that discharge into project waters, for which all necessary federal and state water quality certification or permits have been obtained; (3) other pipelines that cross project lands or waters but do not discharge into project waters; (4) non-project overhead electric transmission lines that require erection of support structures within the project boundary, for which all necessary federal and state approvals have been obtained; (5) private or public marinas that can accommodate no more than 10 watercraft at a time and are located at least one-half mile from any other private or public marina; (6) recreational development consistent with an approved Exhibit R or approved report on recreational resources of an Exhibit E; and (7) other uses, if: (i) the amount of land conveyed for a particular use is five acres or less; (ii) all of the land conveyed is located at least 75 feet, measured horizontally, from the edge of the project reservoir at normal maximum surface elevation; and (iii) no more than 50 total acres of project lands for each project development are conveyed under this clause (d)(7) in any calendar year. At least 45 days before conveying any interest in project lands under this paragraph (d), the licensee must submit a letter to the Director, Office of Hydropower Licensing, stating its intent to convey the interest and briefly describing the type of interest and location of the lands to be conveyed (a marked exhibit G or K map may be used), the nature of the proposed use, the identity of any federal or state agency official consulted, and any federal or state approvals required for the proposed use. Unless the Director, within 45 days from the filing date, requires the licensee to file an application for prior approval, the licensee may convey the intended interest at the end of that period.

(e) The following additional conditions apply to any intended conveyance under paragraph (c) or (d) of this article:

(1) Before conveying the interest, the licensee shall consult with federal and state fish and wildlife or recreation agencies, as appropriate, and the State Historic Preservation Officer.

(2) Before conveying the interest, the licensee shall determine that the proposed use of the lands to be conveyed is not inconsistent with any approved exhibit R or approved report on recreational resources of an exhibit E; or, if the project does not have an approved exhibit R or approved report on recreational resources, that

the lands to be conveyed do not have recreational value.

(3) The instrument of conveyance must include covenants running with the land adequate to ensure that: (i) the use of the lands conveyed shall not endanger health, create a nuisance, or otherwise be incompatible with overall project recreational use; and (ii) the grantee shall take all reasonable precautions to insure that the construction, operation, and maintenance of structures or facilities on the conveyed lands will occur in a manner that will protect the scenic, recreational, and environmental values of the project.

(4) The Commission reserves the right to require the licensee to take reasonable remedial action to correct any violation of the terms and conditions of this article, for the protection and enhancement of the project's scenic, recreational, and other environmental values.

(f) The conveyance of an interest in project lands under this article does not in itself change the project boundaries. The project boundaries may be changed to exclude land conveyed under this article only upon approval of revised exhibit G or K drawings (project boundary maps) reflecting exclusion of that land. Lands conveyed under this article will be excluded from the project only upon a determination that the lands are not necessary for project purposes, such as operation and maintenance, flowage, recreation, public access, protection of environmental resources, and shoreline control, including shoreline aesthetic values. Absent extraordinary circumstances, proposals to exclude lands conveyed under this article from the project shall be consolidated for consideration when revised exhibit G or K drawings would be filed for approval for other purposes.

(g) The authority granted to the licensee under this article shall not apply to any part of the public lands and reservations of the United States included within the project boundary.

(F) The licensee shall serve copies of any Commission filing required by this order on any entity specified in this order to be consulted on matters related to that filing. Proof of service on these entities must accompany the filing with the Commission.

(G) This order is issued under authority delegated to the Director and is final unless appealed to the Commission by any party within 30 days from the issuance date of this order. Filing an appeal does not stay the effective date of this order or any date specified in

this order. The licensee's failure to appeal this order shall constitute acceptance of the license.

Environmental Assessment¹

Federal Energy Regulatory Commission
Office of Hydropower Licensing
Division of Project Review

Date: June 16, 1989

Project name: Gill Mill, D Wheel, Hydroelectric Project

FERC Project No. 2775-001

A. Application

1. Application type: New minor license
2. Date filed with the Commission: November 25, 1988
3. Applicant: Linweave, Inc.
4. Water body: Holyoke Canal; River basin: Connecticut
5. Nearest city or town: Holyoke (See figure 1.)
6. County: Hampden; State: Massachusetts

B. Purpose and Need for Action

1. Purpose.
Linweave estimates the average annual energy generation of the Gill Mill, D Wheel, Hydroelectric Project is 1,790 megawatthours. Project power is sold to the Fitchburg Gas and Electric Light Company.
2. Need for power.

The power from the project is useful in meeting a small part of the need for power projected for the New England Power Pool area of the Northeast Power Coordinating Council (NPCC) region. Power generated at the project displaces fossil-fueled power generation in the NPCC region, thus conserving nonrenewable fossil fuels and reducing the emission of noxious byproducts caused by the combustion of fossil fuels.

C. Proposed Project and Alternatives

1. Description of the proposed action. (See figure 2.)

The existing operating project was issued an initial license in 1977, which will expire in 1991. The licensee has filed for a new license for the continued operation of the project. The existing operating project consists of: (i) a gated intake with submerged trashracks located on the second level canal of the Holyoke Water Power Company; (ii) a 12-foot-

¹ Figures and attachments referenced in the text are omitted from this document due to reproduction requirements.

diameter penstock 295 feet long; (iii) an existing 450-kW generating unit located within the Gill Mill building; (iv) two parallel 7-foot-wide by 10-foot-high arched brick-lined tailrace tunnels extending from the draft tube to an existing outlet structure; (v) a concrete gated outlet structure where tailwater empties into a channel that leads to the Connecticut River; (vi) a 13.8-kV transmission line 660 feet long that connects the project to an existing transmission line; and (vii) appurtenant facilities. The project operates in a run-of-river mode. Linweave does not propose any construction or change in project operation. The Holyoke Water Power Company controls flows from the Connecticut River into the canal system under a FERC major license granted to Project No. 2004.

2. Applicant's proposed mitigative measures.

Since Linweave proposes to continue operating the project as in the past, with no new construction, no changes to the hydroelectric project, and no changes in the use and release of water, Linweave proposes no mitigative measures.

3. Federal lands affected.

No.

4. Alternatives to the proposed project.

a. *Issuance of an annual license.* Section 15(a) of the Federal Power Act (Act), 16 U.S.C. § 808(a), provides for the issuance of annual licenses to the prior licensee if the license expires pending the relicensing determination. Under this alternative, an annual license would continue to be issued to Linweave until a new license is issued. The annual license contains the same terms as the expired license, thereby maintaining the status quo.

b. *Issuance of a non-power license.* Section 15(f) of the Act, § 808(b), authorizes the Commission to issue a license for nonpower use when the Commission "finds that in conformity with a comprehensive plan for improving or developing a waterway or waterways for beneficial public uses all or part of any licensed project should no longer be used or adapted for use for power purposes." A license that is granted by the Commission for nonpower use is temporary. When the Commission finds that a state, municipality, interstate agency, or another federal agency is authorized and willing to assume regulatory supervision of the lands and facilities included under the nonpower license and does so, the Commission shall thereupon terminate the nonpower license.

c. *Denial of the license application.* Denial of the license application could lead to removal of the power facilities and removal of all project works.

D. *Consultation and Compliance*

1. Fish and wildlife agency consultation (Fish & Wildlife Coordination Act).

- a. U.S. Fish & Wildlife Service: Yes.
- b. State(s): Yes.
- c. National Marine Fisheries Service: Yes.

2. Section 7 consultation (Endangered Species Act).

- a. Listed species: Present.
- b. Consultation: Not required.

Remarks: The federally listed endangered shortnose sturgeon under the jurisdiction of the National Marine Fisheries Service (NMFS) inhabits the lower segment of the Connecticut River from the river's mouth upstream to the Holyoke dam. A small landlocked population is found in the pool above the Holyoke dam (Taubert, 1980). Dadswell, *et al.* (1984) estimated that between 800 and 1000 shortnose sturgeon inhabit the lower portion (below Holyoke) of the Connecticut River. The NMFS reports that due to the trashrack spacing, any sturgeon which might enter the canal would be prevented from entrainment into the project (personal communication, Chris Mantzaris, staff, National Marine Fisheries Service, Gloucester, Massachusetts, June 13, 1989).

3. Section 401 certification (Clean Water Act).

Required; applicant requested certification on 10/17/88.

Status: Granted by the certifying agency on 03/30/89.

4. Cultural resource consultation (Historic Preservation Act).

- a. State Historic Preservation Officer: Yes.
- b. National Park Service: Yes.
- c. *National Register* status: Eligible or listed.
- d. Council: Not required.
- e. Further consultation: Not required.

Remarks: The project is adjacent to the Holyoke Canal System, a property listed in the *National Register of Historic Places*. Since there would be no redevelopment, new construction, or changes to the exterior of the property, the project would not affect the canal system or any other *National Register* or eligible properties. The SHPO concurs with this finding (letter from Valerie A. Talmage, Executive Director, Massachusetts Historical Commission, and State Historic Preservation Officer, Boston, Massachusetts, December 9, 1988).

5. Recreational consultation (Federal Power Act).

- a. U.S. Owners: No.
- b. National Park Service: Yes.

c. State(s): Yes.

6. Wild and scenic rivers (Wild and Scenic Rivers Act).

Status: None.

7. Land and Water Conservation Fund lands and facilities (Land and Water Conservation Fund Act).

Status: None.

E. Comments

1. The following agencies and entities provided comments on the application or filed a motion to intervene in response to the public notice dated 03/24/89.

<i>Commenting agencies and other entities</i>	<i>Date of letter</i>
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Department of the Army, New England Division Corps of Engineers	05/11/89
Environmental Protection Agency	05/17/89
Department of the Interior	05/19/89
Massachusetts Division of Fisheries and Wildlife	05/30/89

<i>Motions to intervene</i>	<i>Date of motion</i>
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City of Holyoke, Gas and Electric Department	03/28/89
Holyoke Water Power Company	05/24/89

2. The applicant did not respond to the comments or motion(s) to intervene.

F. Affected Environment

1. General description of the locale. (See figure 3.)

a. Description of the Connecticut River Basin.

The Connecticut River Basin, with a drainage area of 11,765 square miles, is the largest river basin in New England. Extending from the northernmost part of New Hampshire to Long Island Sound, the river basin has a maximum length in a north-south direction of about 280 miles and a maximum width of about 62 miles. The total drainage area of the basin is 11,765 square miles. The principal tributaries to the mainstem Connecticut River, by state, are the Passumpsic, White, West, Ottauquechee, and Black Rivers in Vermont; the Ammonoosuc, Mascoma, Ashuelot, and Sugar Rivers in New Hampshire; the Millers, Deerfield, Chicopee, and Westfield Rivers in Massachusetts; and the Farmington River in Connecticut.

This complex of rivers and tributaries constitutes one of the most extensively developed hydropower systems in the U.S. There is now a major effort by federal, state, and private sectors to restore Atlantic salmon to the Connecticut River Basin.

The project is located in a heavily industrialized setting between the second level of the Holyoke Canal system and the Connecticut River. The climate is typical of inland Connecticut and Massachusetts with an average temperature of 49.8 degrees Fahrenheit and an average annual precipitation of 44.39 inches.

b. Licensed and exempted projects.

There are 62 existing licensed projects and 38 exempted projects in the Connecticut River Basin, as of June 1, 1989.

c. Pending applications.

There are 10 pending license applications in the Connecticut River Basin, as of June 1, 1989.

d. Cumulative impacts.

Cumulative impacts are defined as impacts on the environment that result from the incremental impacts of an action when added to other past, present, and reasonably foreseeable future actions regardless which agency or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (40 C.F.R., Part 1508.7).

A target resource is an important resource that may be cumulatively affected by multiple development within a basin. The staff identified Atlantic salmon as the target resource in the Connecticut River Basin (Federal Energy Regulatory Commission, 1986). The selection was based on the regional significance and geographic distribution of this species within the river basin. This anadromous fishery resource is described below in section F(2d). Impacts to Atlantic salmon are discussed in section G.

2. Descriptions of the resources in the project impact area (Source: Linweave, Inc., application, exhibit E, unless otherwise indicated).

a. *Geology and soils*: Bedrock in the project area is interbedded sandstone, shale, conglomerate, and basaltic lava. The glacial till deposits that lie on the glaciated surface of the bedrock are overlain by varied glacial lake deposits. The original dry, sandy, surface soils in the project area have been highly altered by construction of the project and by fill and construction activities associated with urban development of the area.

b. *Streamflow*: Water flow in the canal system is controlled at the canal gatehouse in order to supply necessary water to various hydropower and industrial facilities along the

canal. The amount of flow entering the canal system ranges from no flow, when the gate-house is shut down, to 5,155 cubic feet per second, which is the maximum hydraulic capacity of the canal.

c. *Water quality:* The Connecticut River upstream of Holyoke dam is classified as Class B water by the Massachusetts Division of Water Pollution. Class B water is suitable for primary and secondary contact recreation and fish and wildlife resources. Class B water must have dissolved oxygen (DO) levels greater than 5.0 milligrams per liter (mg/l) and a pH between 6.5 and 8.0. The first level canal is classified as Class C. Class C water is suitable for secondary contact recreation and fish and wildlife resources and must have a DO level greater than 5.0 mg/l and a pH between 6.5 and 9.0 standard units. Water in the project area conforms to the state water quality standards.

d. *Fisheries:*

Anadromous: Present.

Anadromous fish species found in the Connecticut River in the vicinity of the project include American shad, Atlantic salmon, blueback herring, sea lamprey, striped bass, shortnose sturgeon, and American eel (catadromous).

Resident: Present.

Resident fish species found in the Connecticut River in the vicinity of the project include carp, channel catfish, smallmouth bass, bluegill, rainbow trout, and brown trout.

e. *Vegetation:* Dominant vegetative species in the vicinity of the project include oak, maple, white pine, pitch pine, grasses, and ornamental shrubs.

f. *Wildlife:* Undeveloped land in the project area provides habitat for the gray squirrel, eastern cottontail rabbit, raccoon, muskrat, beaver, weasel, pheasant, and small field mammals (mice and voles). The industrial area is inhabited by English sparrows, starlings, robins, mockingbirds, Norway rats, raccoons, and eastern cottontail rabbits.

g. *Cultural:*

There are properties listed on, or eligible for listing on, the *National Register of Historic Places* in the project impact area.

Description: The Holyoke Canal System, a contributing element in the Holyoke Canal Historic District, is listed on the *National Register of Historic Places* and is within the area of the project's potential environmental impact. The portion of the canal in the project area was constructed between 1854 and 1857.

h. *Visual quality:* The project is in an industrial area. Its appearance is consistent with that of the surrounding buildings and structures.

i. *Recreation:* The immediate project area receives no significant recreational use because of its location in a highly industrialized area. No recreational facilities are located at the project. Recreational facilities including playgrounds, swimming pools, and a skating rink are available for use within walking distance of the project. The Connecticut River in the project vicinity is used for boating and fishing.

j. *Land use:* The project is entirely within the city of Holyoke. Land in the project area is primarily used for commercial, industrial, and residential purposes. The canal system is used for generating hydroelectric power at several locations.

k. *Socioeconomics:* The socioeconomic well-being of the area is influenced by industrial and urban development.

G. *Environmental Issues and Proposed Resolutions*

There are 3 issues addressed below.

1. *Cumulative impacts on Atlantic salmon resulting from developing several hydropower projects in the Connecticut River Basin:* The Atlantic salmon is currently a primary target species for a major federal, state, and private sector restoration effort. The goal of the restoration program is to provide and to maintain a sport fishery for Atlantic salmon in the Connecticut River, and to restore and maintain a spawning population in selected tributaries (Federal Energy Regulatory Commission, 1986).

Seaward migrating salmon smolts in the river basin pass numerous hydropower developments where they may become entrained and impinged. The more hydropower facilities outmigrating fish have to pass, the greater the fish losses. Among these hydropower facilities are the Holyoke dam and the canal system.

When river discharges are high and water is flowing over the dam, migrating fish pass downstream with little or no delay (Northeast Utilities Service Company, 1984). On the other hand, outmigrating fish would be entrained into the canal system by high flows entering the canal if they arrive at the dam when flashboards, permitting little or no spillage, are in place. Once in the canal, escape is very difficult. Fish can then be entrained in the turbines of hydropower plants operating along the canal.

On February 26, 1988, the Commission ordered the Holyoke Water Power Company (HWPC) to spill water over Holyoke dam when

salmon smolts are migrating downstream (Federal Energy Regulatory Commission, 1988a). [HWPC is the licensee for the Hadley Falls Project (FERC Project No. 2004) and the entity that controls the dam and the water going into the canal.] Spilling water over the Holyoke dam allows migrating salmon smolts to pass safely downstream in the spill, instead of entering the canal system.

Canal users and the HWPC have since implemented an economic dispatch agreement, in which the HWPC passes all flow downstream at the Holyoke dam and sells the users electricity, instead of water, when salmon smolts are migrating downstream. Linweave participates in this agreement. This arrangement prevents flow from entering the canal and attracting outmigrating Atlantic salmon, and minimizes the number of outmigrating Atlantic salmon trapped in the canal, and the number of project-related impacts to fish in the river basin.

Continuing to operate the Gill Mill, D Wheel, Hydroelectric Project would not contribute to cumulative adverse impacts on Atlantic salmon.

2. *Authority to prescribe fish passage facilities.* The Department of the Interior states that fish passage facilities may be needed at the project in the future, and, by letter of May 24, 1989 they reserve the authority to prescribe such fish facilities. The Commission reserves authority to require the licensee to provide fishways, as may be prescribed by the Secretary of Interior pursuant to section 18 of the Federal Power Act, if the need arises in the future.

3. *Entraining fish in the intake structure:* The Massachusetts Division of Fisheries and Wildlife (DFW) recommended the trashracks at the intake structures have a bar spacing not greater than 1 inch to prevent the entrainment of fish. The project's intake opening includes trashracks with one-inch slot width spacing between bars. The bar spacing at the existing structure satisfies the DFW's recommendation.

H. Environmental Impacts

1. Assessment of impacts expected from the applicant's proposed project (P), with the applicant's proposed mitigation and any conditions set by a federal land management agency; the proposed project with any additional mitigation recommended by the staff (Ps); and any action alternative considered (A).

Assessment symbols indicate the following impact levels:

O = None;	1 = Minor;
2 = Moderate;	3 = Major;
A = Adverse;	B = Beneficial;
L = Long-term;	S = Short term.

Resource	P	Impact Ps	A
a. Geology-Soils	0		
b. Streamflow	0		
c. Water quality:			
Temperature	0		
Dissolved oxygen	0		
Turbidity and sedimentation	0		
d. Fisheries:			
Anadromous	0		
Resident	0		
e. Vegetation	0		
f. Wildlife	0		
g. Cultural:			
Archeological	0		
Historical	0		
h. Visual quality	0		
i. Recreation	0		
j. Land use	0		
k. Socioeconomics	0		

2. Recommended alternative (including proposed, required, and recommended mitigative measures):

Proposed project.

3. Reason(s) for selecting the preferred alternative.

The power generated at this project is produced without any known adverse environmental impacts.

I. Unavoidable Adverse Impacts of the Recommended Alternative

There are no known adverse impacts.

J. Conclusion

Finding of No Significant Impact. Approval of the recommended alternative [H(2)] would not constitute a major federal action significantly affecting the quality of the human environment; therefore, an environmental impact statement (EIS) will not be prepared.

K. Literature Cited

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- Northeast Utilities Service Company. 1984. Review of cancelled Atlantic salmon smolt (*Salmo salar*), radiotelemetry study at the Holyoke dam, Massachusetts. Hartford, Connecticut. September 1984.
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- _____. 1988a. Order amending license for the Hadley Falls Project, FERC Project No. 2004, Massachusetts. February 26, 1988 [42 FERC ¶ 62,166].
- _____. 1988b. Environmental assessment for the Number 2 Hydro Unit, FERC Project No. 2387, Holyoke, Massachusetts. August 26, 1988.
- Taubert, B.D. 1980. Biology of shortnose sturgeon (*Acipenser brevirostrum*) in the Holyoke Pool, Connecticut River, Massachusetts. Ph.D. Thesis. University of Massachusetts, Amherst, 136 pp.

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 Mary Nowak—Editor
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Safety and Design Assessment

Gill Mill (D Wheel) Hydroelectric Project
 FERC Project No. 2775-001, MA

Project Safety

The applicant for the Gill Mill (D Wheel) Project is Linweave, Inc., a manufacturer of paper products. No dam or spillway is included in the project works. All water is delivered to the project via the Holyoke Second Level Canal, which is owned and operated by the Holyoke Water Power Company (HWP).

The New York Regional Office (NYRO), in an Operation Inspection Report dated October

10, 1986, indicated that the existing project had no downstream hazard potential. Since there is no dam, the staff concludes that there are no dam safety problems.

Project Design

The existing project works consist of: (1) a gated intake with submerged trashracks located on the Second Level Canal of the HWP; (2) a 295-foot-long, 12-foot-diameter steel penstock; (3) a single runner, Francis turbine directly coupled to a 450-kilowatt (kW) Westinghouse generator; (4) two 125-foot-long, 7-foot-wide by 10-foot-high arched, brick-lined tailrace tunnels; (5) a concrete gated outlet structure where the tailwater empties into a channel that leads to the Connecticut River; and (6) appurtenant facilities. The 310-foot-long by 325-foot-wide Gill Mill building which houses the generating equipment is not considered part of the project works.

The primary transmission lines to be included in a new license for Project No. 2775 can be described as a 660-foot run of three-phase, 0.6-kilovolt (kV) overhead line extending from the 0.6-kV terminals of the project generator to the 0.6-kV terminals of the Mt. Tom step-up transformer; and a 90-foot run of three-phase, 13.8-kV overhead line extending from the 13.8-kV terminals of the Mt. Tom step-up transformer bank to the 13.8-kV substation owned by the Holyoke Water Power Company (HWP).

In addition to the primary lines, the new license should include the single-runner Francis turbine, the 450-kilowatt (kW) Westinghouse generator, all necessary switchgear, all installed electrical protection and control apparatus, and all instrumentation. No step-up transformer is included since Project No. 2775 shares the kilovoltampere (kVA) capacity of the Mt. Tom step-up transformer bank.

The applicant has proposed no new construction or improvements for the existing project; therefore, the project license does not need to include any special engineering articles.

The NYRO October 1986 Operation Inspection Report cited no deficiencies in project safety or operation. There is no dam within the project boundaries.

The staff concludes that the project would be safe and adequate if operated in conformance with the terms of a new license.

Water Resource Planning

The project works would contain one 450-kW generator directly connected to a Francis turbine. The gross head at the site ranges from 24 to 32 feet depending upon the tailwater elevation and the average head is 30 feet. The design head of the turbine is 32 feet and its

hydraulic capacity is estimated to be 161 cubic feet per second (cfs). The applicant indicated that the project generated 1,790 megawatthours (MWh) annually. The staff finds that the plant factor would be 45 percent. The project would continue to be operated manually in a run-of-river mode.

All water to the project is delivered via the Second Level Canal. The Second Level Canal is one of a series of three canals (First Level Canal, Second Level Canal, and Third Level Canal) that receives water from the Hadley Falls Project (FERC Project No. 2004) on the Connecticut River. The HWP owns and operates the Hadley Falls Project and its canal system, which delivers water to various manufacturing and other business concerns for process purposes and power generation. The applicant for the Gill Mill (D Wheel) Project is Linweave, Inc.

The water for power generation is allocated in the form of mill powers (mp) to owners of lands adjacent to the canal system, under indentures or contracts between the individual property owners and the HWP.

These "mp" quantities vary according to water flow in the Connecticut River and fall into the following three categories:

Permanent power - the amount of water sold to Linweave whenever the average daily river flows in the Connecticut River are equal to or greater than 3,100 cfs.

Surplus power - water offered for sale to owners of the so-called permanent power rights whenever average river flows in the Connecticut River are equal to or greater than 3,600 cfs.

Non-permanent power - water which is not guaranteed, but which would be furnished when there is more than a sufficient quantity of water in the river to supply all the permanent power owners together with 50 percent of it as surplus. Water would be supplied 6 days a week (but not on Sundays or holidays) when the river flows are equal to or greater than 3,865 cfs. Sunday and holiday operation is allowed when the average river flows exceed approximately 4,300 cfs.

Under the allocation terms of the indentures, Linweave is entitled, in perpetuity, to draw a carefully prescribed quantity of water from the HWP canal system for power generation and discharge it into the Connecticut River below the project. Linweave is also entitled to purchase and use such surplus water as the HWP makes available from time to time.

The Gill Mill (D Wheel) Project is authorized one type of water allocation rights based on the indentures: non-permanent. For non-permanent power allocations, the Gill Mill (D Wheel)

Project is authorized to withdraw 5.2 mp or 150 cfs. Based on the staff's flow duration curve for the Connecticut River, the applicant can withdraw 150 cfs about 87 percent of the time. Whenever the flows in the Connecticut River exceed 15,000 cfs, the applicant can withdraw the maximum hydraulic capacity of the turbine unit, which is 161 cfs, from the Second Level Canal. The staff estimates that this could occur about 31 percent of the time.

The applicant has estimated that the project operates at its maximum capacity (161 cfs) about 26 percent of the time, and at its non-permanent allocation (150 cfs) about 58 percent of the time. Based on the applicant's estimates, the project would be shut down 16 percent of the time. The NYRO 1986 Operation Inspection Report indicated that the canal system is shut down 3 times a year: once in April, once in July, and once in October. During those periods, the canal system is drained, inspected, and repaired if needed. The repairs are generally scheduled for the July shutdown.

There are certain periods of the year when the project cannot operate and the applicant is directed by the HWP to discontinue drawing water from the canal system. These periods include: (1) periods when the canal system is dewatered for inspection and maintenance; (2) periods of low flow in the Connecticut River when a public authority has required that the low flows be released at the Hadley Falls Project rather than through the canals according to the indentures, without generating power; and (3) periods when a public authority requires that the waters of the Connecticut River flow through the HWP's hydroelectric generating facilities at the Hadley Falls Project rather than through the canal system according to the indentures. During the latter periods when the HWP generates power at the Hadley Falls Project rather than releases water through the canal system, the applicant is entitled to compensation in kilowatthours (in lieu of water) under the terms of the Water Use Agreement (or Economic Dispatch Agreement). In 1987, the compensation provided under the Economic Dispatch Agreement amounted to 1,545 MWh for the eight projects owned by the applicant.

The staff's independent analysis shows that the applicant makes reasonable use of its allocated water. Because of the water allocation limits of the HWP, the applicant cannot develop additional potential at the site. Hence, the staff concludes that the applicant has properly developed the head and hydraulic potential of the site.

The August 1983 Planning Status Report for the Connecticut River Basin lists 19 existing hydroelectric projects, including the Gill Mill

(D Wheel) Project, which are located on the canal system owned by HWP. The applicant owns eight of these projects. The report also listed the Holyoke Project on the canal system as a potential project with an installed capacity of 1.222 MW and an annual generation of 13,165 MWh. The report did not indicate any proposed project on the canal system that would be in conflict with the Gill Mill (D Wheel) Project.

The staff's review of the state and federal agency comments and of seven comprehensive resource development plans identified no plans with which the existing project would be in conflict within this reach of the Second Level Canal. The staff presently has no specific comments or recommendations from reviewing agencies addressing flood control, navigation, or water supply requirements for the Second Level Canal. No competing applications for the project are currently pending before the Commission.

The City of Holyoke, Massachusetts Gas and Electric Department, and the HWP filed petitions to intervene in the licensing proceeding. Neither party opposes the issuance of a license, but each want to protect its interests. The HWP submitted a series of technical comments correcting certain information in the application. None of the corrections affect this report.

The generation from this project is equivalent to generation produced from burning 2,940 barrels of oil or 830 tons of coal annually in a steam-electric plant.

In summary, the staff's analysis shows that the existing project is properly designed to develop the hydropower potential of the site.

Economic Evaluation

The proposed project would be economically beneficial, so long as the projected levelized

cost is less than the levelized cost of alternative energy and capacity.

In the case of the Gill Mill (D Wheel) Project, the applicant has proposed no new construction. Hence, the levelized project costs would be the operation and maintenance costs and administrative and general costs. These costs are small compared to the value of the power.

The applicant currently sells the project power to Fitchburg Gas & Electric Light Company, pursuant to a power sales agreement dated March 25, 1982, and it would continue to do so.

The staff concludes that the existing project is economically beneficial.

Exhibits

The staff concludes that the following parts of exhibit A and the following exhibit F drawings conform to the Commission's rules and regulations. The staff therefore includes these in the license:

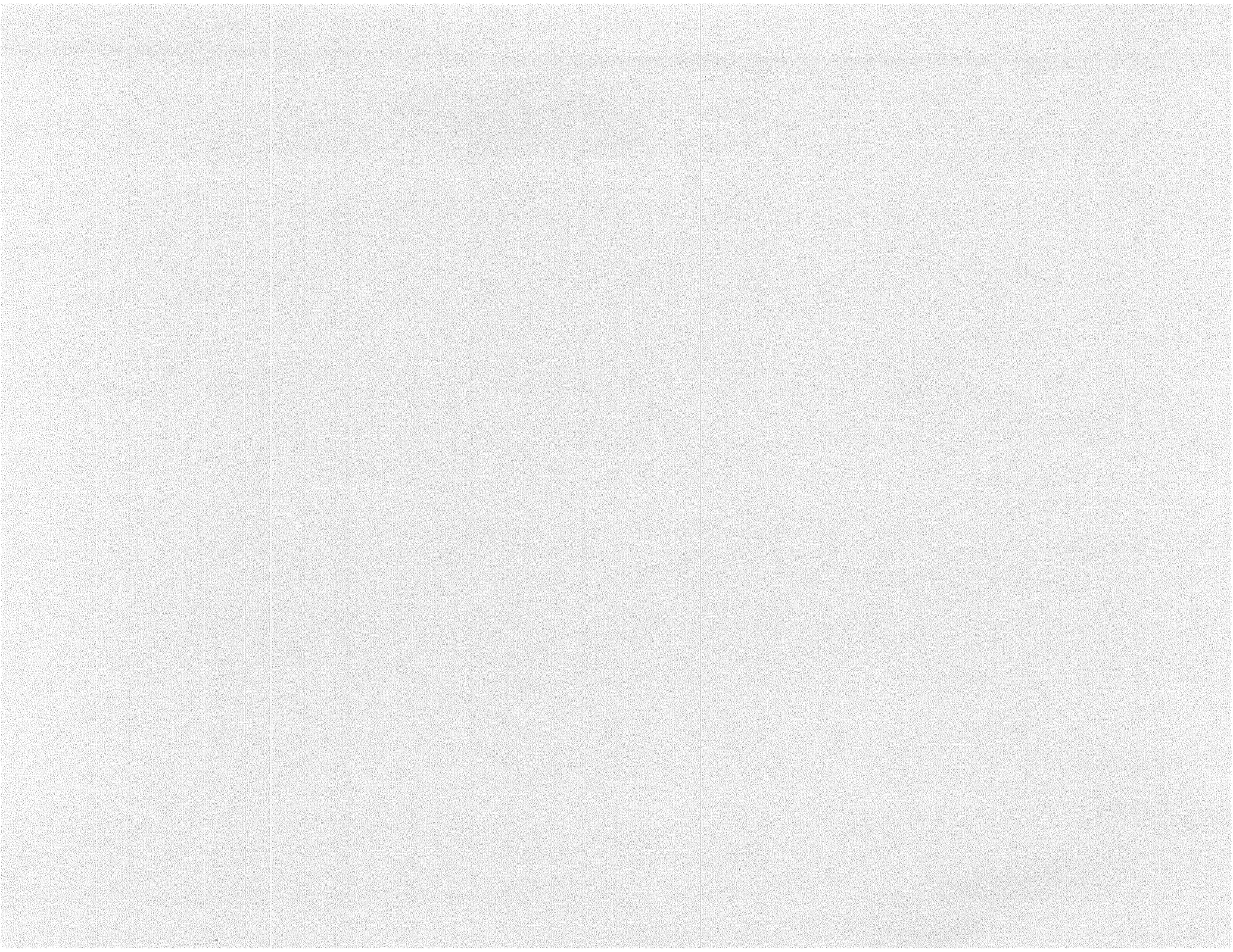
Exhibit A - The following sections of exhibit A filed November 25, 1988:

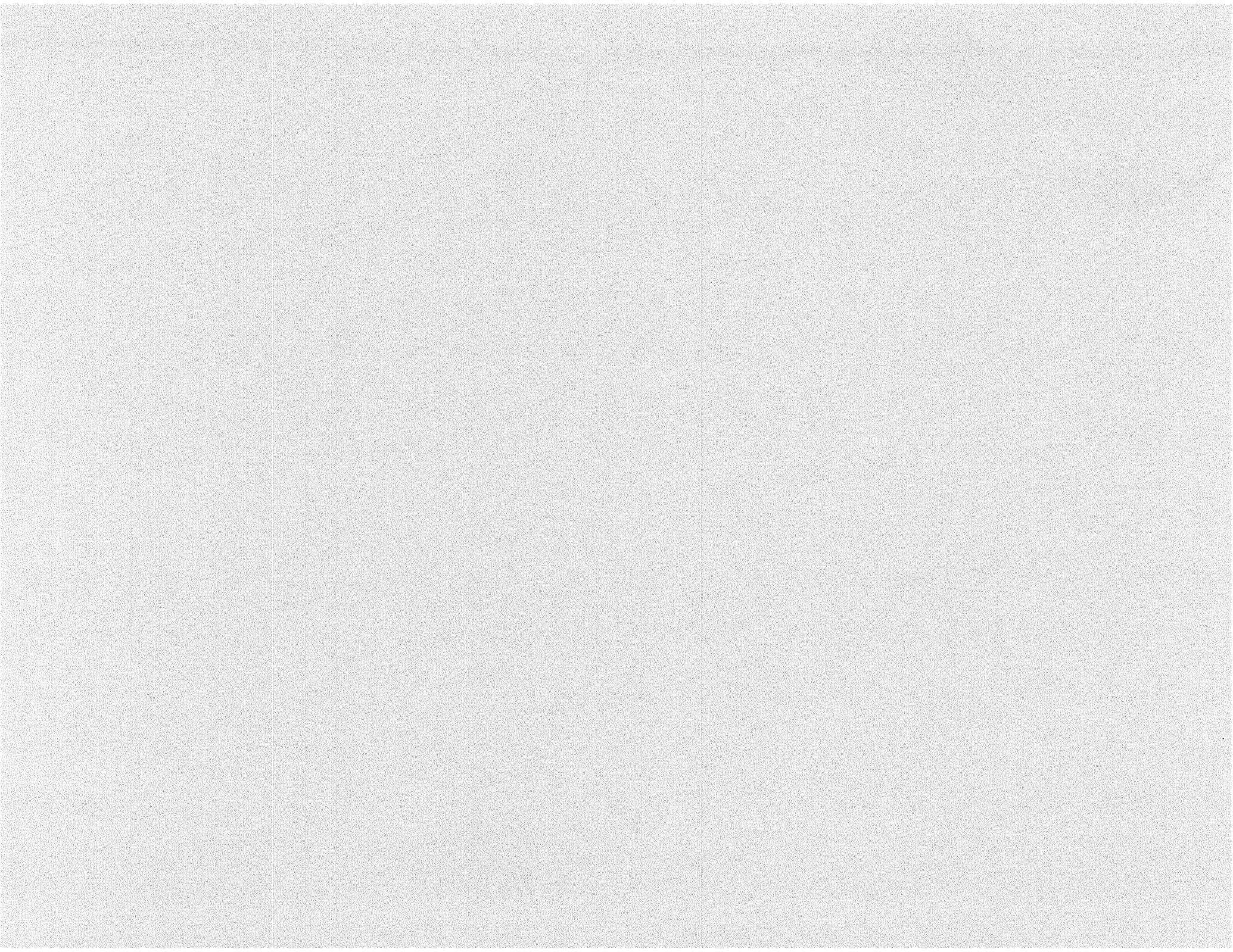
The turbine and generator description on page A-2; the transmission line description on pages A-2 and A-3, as corrected by letter dated April 10, 1989; and the additional mechanical and electrical equipment description on pages A-1 through A-7.

<i>Exhibit</i>	<i>FERC No.</i>	<i>Showing</i>
F-1	2775-3	Site Plan
F-2	2775-4	Powerhouse Plan and Elevation

Preparers

Ronald E. Spath, Civil Engineer
C. Frank Miller, Electrical Engineer





[¶ 62,297]

Linweave, Inc., Project No. 2775-001 - Massachusetts

Order Issuing New License (Minor Project)

(Issued June 29, 1989)

Fred E. Springer, Director, Office of Hydropower Licensing.

Linweave, Inc. has filed a license application under Part I of the Federal Power Act (Act) to continue to operate and maintain the Gill Mill (D Wheel) Project, located on the Holyoke Canal, in Hampden County, Massachusetts. The hydroelectric facilities located along the Holyoke Canal system affect navigable waters of the United States.¹ The license for the project, which was issued on July 19, 1977 [59 FPC 736], with an effective date of March 1, 1941, expires on February 28, 1991. The existing license waived section 15 of the Act only as it relates to federal takeover.

Notice of the application has been published. No protests were filed in this proceeding, and

no agency objected to issuance of this license. Comments received from interested agencies and individuals have been fully considered in determining whether to issue this license. Motions to intervene were filed by the City of Holyoke Gas & Electric Department and the Holyoke Water Power Company (HWP) in order to be parties in this proceeding. HWP also requests that any license issued which utilizes HWP's Holyoke Canal System water be conditioned, as was the previous license, to require cooperation with HWP as the licensee for the Hadley Falls Project No. 2004. Article 202 is included to provide for appropriate cooperation.

¹ See 33 FPC 593, 594 (1965).

Comprehensive Development

Sections 4(e) and 10(a)(1) of the Act require the Commission to consider and balance in the public interest all uses of the waterway on which a project is proposed to be located.

The Gill Mill (D Wheel) Project has operated under the terms of its existing license since 1977. In the environmental assessment (EA), the staff analyzed the environmental effects of the continued operation of the project. Neither the resource agencies nor staff identified any significant conflicts between continued operation of the project as proposed by the applicant, and the environmental values of the project area.

Three alternatives to relicensing the Gill Mill (D Wheel) Project were also considered by the staff in its EA. They include: (1) issuance of an annual license; (2) issuance of a non-power license; and (3) denial of a license application. No alternative was identified that would have a higher or better use of the project in terms of providing power and environmental benefits without significant environmental cost.

Section 10(a)(2) of the Act also requires the Commission to consider the extent to which a proposed project is consistent with an existing federal, state, or local comprehensive plan. Under section 10(a)(2), federal, and state agencies filed seven comprehensive plans that address resources in Massachusetts. Of these plans, staff identified and reviewed four plans relevant to this project.² No conflicts between the proposed Gill Mill (D Wheel) Project and these four plans were found.

Therefore, the project as conditioned is determined to be best adapted to a comprehensive plan, pursuant to Section 10(a) of the Act, for improving a waterway and would provide for adequate protection, mitigation, and enhancement of fish and wildlife pursuant to Section 10(j) of the Act.

Recommendations of Federal and State Fish and Wildlife Agencies

Section 10(j) of the Act requires the Commission to include license conditions, based on recommendations of federal and state fish and wildlife agencies, for the protection, mitigation, and enhancement of fish and wildlife. The environmental assessment for the Gill Mill (D Wheel) Project addresses the concerns of the federal and state fish and wildlife agencies;

however, recommendations are not needed for continued operation of the project.

ECPA Findings

Section 10(a)(2)(C) and section 15(a) of the Federal Power Act, as amended by the Electric Consumers Protection Act of 1986 (ECPA), requires the Commission to consider in writing the following factors in issuing new licenses.

The following discussions apply individually and collectively to the eight hydro projects owned and operated by Linweave, Inc. The eight projects are identified by FERC project numbers: 2497, 2758, 2766, 2768, 2770, 2771, 2772, and 2775.

Consumption Efficiency Improvement Programs (Section 10(a)(2)(C))

Since the applicant's primary business is the manufacture of paper products and not the generation or sale of electric power, no discussion of on-going or planned conservation and load-management programs is required in this document.

The Plans and Abilities of the Applicant to Comply with the Articles, Terms, and Conditions of Any License Issued to it and Other Applicable Provisions of Part I of the Act (Section 15(a)(2)(A))

The staff has reviewed the plans of the applicant to comply with the articles, terms, and conditions of any license issued to Linweave, Inc.

A review of the compliance record of the applicant indicates that the applicant's compliance with the terms and conditions of its current license has been satisfactory. The staff concludes that the applicant has demonstrated its ability to comply in a good faith manner with all articles, terms, and conditions of the license, and the staff concludes that the applicant would perform in a competent manner if issued a new license for the project.

The Plans of the Applicant to Manage, Operate, and Maintain the Project Safely (Section 15(a)(2)(B))

The staff has reviewed the applicant's plans to manage, operate, and maintain the project safely. There is no dam within the project boundaries to operate and maintain.

² Connecticut River 1982 Water Quality Management Plan, June 1983, Massachusetts Division of Water Pollution Control; Connecticut River Basin Fish Passage, Flow, and Habitat Alteration Considerations in Relation to Anadromous Fish Restoration, October 1981, Technical Committee for Fisheries Management of the Connecticut River; The Outdoor

Heritage of Massachusetts, SCORP 1983-1988, December 1983, Massachusetts Department of Environmental Management; A Strategic Plan for the Restoration of Atlantic Salmon to the Connecticut River Basin, September 1982, Policy Committee for Fisheries Management of the Connecticut River.

The eight projects draw carefully prescribed quantities of water from the Second Level Canal and discharge it to the Connecticut River below the projects. There is a flood wall located between the eight projects and the Connecticut River that ensures protection during flood conditions. When the river elevations reach 62 feet or higher, the eight projects are shut down and the headgates and tailrace gates are closed. The City of Holyoke Department of Public Works is responsible for implementing the flood wall operation schedule and closing the tailrace gates of the eight projects.

The applicant has operated the eight projects with a perfect employee safety and public safety record. There have been no deaths or lost-time injuries to employees from project operations, nor is there any record of injury or death to the public within the project boundaries.

Based upon a review of the available information on the project safety plans, the staff concludes that the applicant is capable of managing, operating, and maintaining the project in a safe manner.

The Plans and Abilities of the Applicant to Operate and Maintain the Project in a Manner Most Likely to Provide Efficient and Reliable Electric Service (Section 15(a)(2)(C))

The staff has reviewed the operation inspection reports by the NYRO and the applicant's project operation reports.

The applicant has full time employees in its engineering department that monitor the eight projects, including physically checking each unit several times daily. Additionally, the projects have automatic safety devices to shut down the units in case of abnormal operating conditions.

The applicant cleans the trashracks and lubricates the mechanical machinery regularly. The applicant provides for periodic inspection of the penstock and provides maintenance when needed.

The applicant has reported a total of seven unscheduled outages for the eight projects over the last five years. The outages ranged in length from 48 days to 114 days during which time the equipment was repaired. The applicant has rebuilt and/or overhauled seven of the generating units since February 1979 when the applicant purchased the eight projects.

The applicant has no plans to increase generation at the eight projects. The main reason for this is that the applicant is entitled to withdraw only a carefully prescribed quantity of water from the Second Level Canal under the terms of certain indenture agreements with HWP.

The applicant is in the paper-products manufacturing business, which is a highly competitive field and is very energy-intensive. Because of the competition in the paper-products market, the applicant must operate the project in the most efficient and reliable manner to maximize electric power sales revenues available to offset power purchases for use in its paper manufacturing operations.

The staff concludes that the project is being operated in an efficient and reliable manner.

The Need of the Applicant Over the Short and Long Terms for the Electricity Produced by the Project to Serve Its Customers (Section 15(a)(2)(D))

The applicant, Linweave, Inc., is a manufacturer of paper products and, as such, does not sell any of the electrical output of the eight hydroelectric projects (which it owns and operates as the current licensee) to end-use customers. Therefore, this document does not address the applicant's need for the electricity generated by the eight projects to serve its customers. The paper-products manufacturing business is today a highly competitive industry. Production costs in this industry are very energy intensive, due to the large amounts of electric energy used for the manufacture of paper. When deprived of a low-cost source (or sources) of electric energy, a paper manufacturer cannot survive in the market place for paper products.

All eight of the hydropower projects for which the applicant is applying for new licenses are operated in the run-of-the-river mode; and, as a result, the capacity and energy produced by them depend upon the available streamflow provided by the Second Level Canal of the Holyoke Water Power Company. This flow is subject to seasonal and yearly variations. The applicant's electric power demands at the several paper mills are determined by factors which are in no way correlated with water flow in the canal system. Because of this, and for other reasons affecting the applicant's paper-making electrical energy costs, Linweave has found it to be economically advantageous to sell the output of the eight projects to a local electric utility and purchase the power required by the Linweave paper mills.

The total net electrical output from all eight of the projects is currently being sold, and is expected to continue to be sold to Fitchburg Gas and Electric Light Company, pursuant to a power sales agreement dated March 25, 1982.

The applicant's present and future need for the electric power produced by the eight hydro projects, with which this document is concerned, can be stated in few words: revenues

received from the sale of project capacity and energy are used to offset the cost of capacity and energy purchased on an "as-needed, total requirements" purchase agreement with a local utility, thus improving Linweave's competitive position in the paper products marketplace, which may prove necessary for industrial survival.

The total installed capacity of the eight hydro projects is 3.362 megawatts, and the applicant estimates that the projects are capable of producing an average of 16,997 megawatthours of energy annually.

The staff concludes that there is a need for the project power over the short and the long term.

The Existing and Planned Transmission Services of the Applicant (Section 15(a)(2)(E))

If the applicant is issued new licenses for the eight hydro projects listed above, no changes of the existing transmission system, its operation, or operating characteristics would occur as a result thereof, and none are planned.

If new licenses are denied, the transmission system, or systems associated with the eight projects, would no longer be required, since the applicant would no longer generate power to sell. The applicant would continue to purchase "all requirements" power required for the operation of the paper mills from a local utility. Transmission would not be affected by denial of the licenses.

The staff concludes that the transmission services are adequate as they currently exist.

Whether the Plans of the Applicant will be Achieved, to the Greatest Extent Possible, in a Cost Effective Manner (Section 15(a)(2)(F))

The Gill Mill was constructed in 1880 and the present hydroelectric generating unit rebuilt in 1983. No new construction is proposed. The annual cost of operating the project would be its annual operation and maintenance costs. Continued future project operation would serve to provide an economically efficient source of energy for Linweave, Inc. The staff concludes that the project is economically beneficial.

The Applicant's Record of Compliance with the Terms and Conditions of the Existing License (Section 15(a)(3))

The compliance records of Linweave, Inc., with the terms and conditions of its existing licenses, are satisfactory. Further, the licensee has maintained the projects in a satisfactory manner.

The licensee is reminded that failure to comply with the terms and conditions of this license will subject it to the enforcement and penalty provisions of section 31 of the Federal Power Act.

Term of License

Section 15 of the Act, as amended by ECPA specifies that any license issued under section 15 shall be for a term which the Commission determines to be in the public interest, but not less than 30 years, nor more than 50 years from the date the license is issued. This provision is similar to pre-ECPA Commission policy, which was to establish from the expiration date of the existing license, 30-year terms for those projects which proposed no new construction or capacity, 40-year terms for those projects that proposed a moderate amount of new development, and 50-year terms for those projects that proposed a substantial amount of new development.³

Linweave, Inc. proposes no modifications to the existing project facilities or change in operation of the project. However, the existing license will not expire until February 28, 1991. Accordingly, the new license for the project will be for a term of 30 years from the expiration of the existing license.

Summary of Findings

An EA was issued for this project. Background information, analysis of impacts, support for related license articles, and the basis for a finding of no significant impact on the environment are contained in the EA attached to this order. Issuance of this license is not a major federal action significantly affecting the quality of the human environment.

The design of this project is consistent with the engineering standards governing dam safety. The project will be safe if operated and maintained in accordance with the requirements of this license. Analysis of related issues is provided in the Safety and Design Assessment attached to this order.

The Director, Office of Hydropower Licensing, concludes that the project would not conflict with any planned or authorized development, and would be best adapted to comprehensive development of the waterway for beneficial public uses.

The Director orders:

(A) This license is issued to Linweave, Inc. (licensee), for a period of 30 years, effective March 1, 1991, to operate and maintain the Gill Mill (D Wheel) Project. This license is

³ See *Montana Power Company*, 56 FPC 2008 (1976).

subject to the terms and conditions of the Act, which is incorporated by reference as part of this license, and subject to the regulations the Commission issues under the provisions of the Act.

(B) The project consists of:

(1) All lands, to the extent of the licensee's interests in those lands, shown by exhibit G:

<i>Exhibit</i>	<i>FERC No.</i>	<i>Showing</i>
G-1	2775-3	Project Location

(2) Project works consisting of: (a) a gated intake with submerged trashracks located on the second level canal of the Holyoke Water Power Company; (b) a 12-foot-diameter penstock 295 feet long; (c) a 450-kW generating unit located within the Gill Mill building; (d) two parallel 7-foot-wide by 10-foot-high arched brick-lined tailrace tunnels extending from the draft tube to an existing outlet structure; (e) a concrete gated outlet structure where tailwater empties into a channel that leads to the Connecticut River; (f) a 13.8-kV transmission line 660 feet long that connects the project to an existing transmission line; and (g) appurtenant facilities.

The project works generally described above are more specifically shown and described by those portions of exhibits A and F recommended for approval in the attached Safety and Design Assessment.

(3) All of the structures, fixtures, equipment or facilities used to operate or maintain the project, all portable property that may be employed in connection with the project and all riparian or other rights that are necessary or appropriate in the operation or maintenance of the project.

(C) The exhibit G described above and those sections of exhibits A and F recommended for approval in the attached Safety and Design Assessment are approved and made part of the license.

(D) The following sections of the Act are waived and excluded from the license for this minor project:

4(b), except the second sentence; 4(e), insofar as it relates to approval of plans by the Chief of Engineers and the Secretary of the Army; 6, insofar as it relates to public notice and to the acceptance and expression in the license of terms and conditions of the Act that are waived here; 10(c), insofar as it relates to depreciation reserves; 10(d); 10(f); 14, except insofar as the power of condemnation is reserved; 15; 16; 19; 20; and 22.

(E) This license is subject to the articles set forth in Form L-9 (October 1975) [reported at 54 FPC-1852], entitled "Terms and Conditions of License for Constructed Minor Project

Affecting Navigable Waters of the United States", and the following additional articles:

Article 201. The licensee shall pay the United States the following annual charge, effective March 1, 1991:

For the purpose of reimbursing the United States for the cost of administration of Part I of the Act, a reasonable amount as determined in accordance with the provisions of the Commission's regulations in effect from time to time. The authorized installed capacity for that purpose is 600 horsepower.

Article 202. The Licensee shall cooperate with the licensee for Project No. 2004 in order that the conditions of Article 16 of the license for Project No. 2004 can be fulfilled.

Article 401. Authority is reserved to the Commission to require the licensee to construct, operate, and maintain, or provide for the construction, operation, and maintenance of such fishways, as may be prescribed by the Secretary of the Interior pursuant to section 18 of the Federal Power Act.

Article 402. (a) In accordance with the provisions of this article, the licensee shall have the authority to grant permission for certain types of use and occupancy of project lands and waters and to convey certain interests in project lands and waters for certain types of use and occupancy, without prior Commission approval. The licensee may exercise the authority only if the proposed use and occupancy is consistent with the purposes of protecting and enhancing the scenic, recreational, and other environmental values of the project. For those purposes, the licensee shall also have continuing responsibility to supervise and control the use and occupancies for which it grants permission, and to monitor the use of, and ensure compliance with the covenants of the instrument of conveyance for, any interests that it has conveyed, under this article. If a permitted use and occupancy violates any condition of this article or any other condition imposed by the licensee for protection and enhancement of the project's scenic, recreational, or other environmental values, or if a covenant of a conveyance made under the authority of this article is violated, the licensee shall take any lawful action necessary to correct the violation. For a permitted use or occupancy, that action includes, if necessary, cancelling the permission to use and occupy the project lands and waters and requiring the removal of any non-complying structures and facilities.

(b) The type of use and occupancy of project lands and water for which the licensee may grant permission without prior Commission approval are: (1) landscape plantings; (2) non-commercial piers, landings, boat docks, or similar structures and facilities that can accommo-

date no more than 10 watercraft at a time and where said facility is intended to serve single-family type dwellings; and (3) embankments, bulkheads, retaining walls, or similar structures for erosion control to protect the existing shoreline. To the extent feasible and desirable to protect and enhance the project's scenic, recreational, and other environmental values, the licensee shall require multiple use and occupancy of facilities for access to project lands or waters. The licensee shall also ensure, to the satisfaction of the Commission's authorized representative, that the use and occupancies for which it grants permission are maintained in good repair and comply with applicable state and local health and safety requirements. Before granting permission for construction of bulkheads or retaining walls, the licensee shall: (1) inspect the site of the proposed construction, (2) consider whether the planting of vegetation or the use of riprap would be adequate to control erosion at the site, and (3) determine that the proposed construction is needed and would not change the basic contour of the reservoir shoreline. To implement this paragraph (b), the licensee may, among other things, establish a program for issuing permits for the specified types of use and occupancy of project lands and waters, which may be subject to the payment of a reasonable fee to cover the licensee's costs of administering the permit program. The Commission reserves the right to require the licensee to file a description of its standards, guidelines, and procedures for implementing this paragraph (b) and to require modification of those standards, guidelines, or procedures.

(c) The licensee may convey easements or rights-of-way across, or leases of, project lands for: (1) replacement, expansion, realignment, or maintenance of bridges and roads for which all necessary state and federal approvals have been obtained; (2) storm drains and water mains; (3) sewers that do not discharge into project waters; (4) minor access roads; (5) telephone, gas, and electric utility distribution lines; (6) non-project overhead electric transmission lines that do not require erection of support structures within the project boundary; (7) submarine, overhead, or underground major telephone distribution cables or major electric distribution lines (69-kV or less); and (8) water intake or pumping facilities that do not extract more than one million gallons per day from a project reservoir. No later than January 31 of each year, the licensee shall file three copies of a report briefly describing for each conveyance made under this paragraph (c) during the prior calendar year, the type of interest conveyed, the location of the lands subject to the conveyance, and the nature of the use for which the interest was conveyed.

(d) The licensee may convey fee title to, easements or rights-of-way across, or leases of project lands for: (1) construction of new bridges or roads for which all necessary state and federal approvals have been obtained; (2) sewer or effluent lines that discharge into project waters, for which all necessary federal and state water quality certification or permits have been obtained; (3) other pipelines that cross project lands or waters but do not discharge into project waters; (4) non-project overhead electric transmission lines that require erection of support structures within the project boundary, for which all necessary federal and state approvals have been obtained; (5) private or public marinas that can accommodate no more than 10 watercraft at a time and are located at least one-half mile from any other private or public marina; (6) recreational development consistent with an approved Exhibit R or approved report on recreational resources of an Exhibit E; and (7) other uses, if: (i) the amount of land conveyed for a particular use is five acres or less; (ii) all of the land conveyed is located at least 75 feet, measured horizontally, from the edge of the project reservoir at normal maximum surface elevation; and (iii) no more than 50 total acres of project lands for each project development are conveyed under this clause (d)(7) in any calendar year. At least 45 days before conveying any interest in project lands under this paragraph (d), the licensee must submit a letter to the Director, Office of Hydropower Licensing, stating its intent to convey the interest and briefly describing the type of interest and location of the lands to be conveyed (a marked exhibit G or K map may be used), the nature of the proposed use, the identity of any federal or state agency official consulted, and any federal or state approvals required for the proposed use. Unless the Director, within 45 days from the filing date, requires the licensee to file an application for prior approval, the licensee may convey the intended interest at the end of that period.

(e) The following additional conditions apply to any intended conveyance under paragraph (c) or (d) of this article:

(1) Before conveying the interest, the licensee shall consult with federal and state fish and wildlife or recreation agencies, as appropriate, and the State Historic Preservation Officer.

(2) Before conveying the interest, the licensee shall determine that the proposed use of the lands to be conveyed is not inconsistent with any approved exhibit R or approved report on recreational resources of an exhibit E; or, if the project does not have an approved exhibit R or approved report on recreational resources, that

the lands to be conveyed do not have recreational value.

(3) The instrument of conveyance must include covenants running with the land adequate to ensure that: (i) the use of the lands conveyed shall not endanger health, create a nuisance, or otherwise be incompatible with overall project recreational use; and (ii) the grantee shall take all reasonable precautions to insure that the construction, operation, and maintenance of structures or facilities on the conveyed lands will occur in a manner that will protect the scenic, recreational, and environmental values of the project.

(4) The Commission reserves the right to require the licensee to take reasonable remedial action to correct any violation of the terms and conditions of this article, for the protection and enhancement of the project's scenic, recreational, and other environmental values.

(f) The conveyance of an interest in project lands under this article does not in itself change the project boundaries. The project boundaries may be changed to exclude land conveyed under this article only upon approval of revised exhibit G or K drawings (project boundary maps) reflecting exclusion of that land. Lands conveyed under this article will be excluded from the project only upon a determination that the lands are not necessary for project purposes, such as operation and maintenance, flowage, recreation, public access, protection of environmental resources, and shoreline control, including shoreline aesthetic values. Absent extraordinary circumstances, proposals to exclude lands conveyed under this article from the project shall be consolidated for consideration when revised exhibit G or K drawings would be filed for approval for other purposes.

(g) The authority granted to the licensee under this article shall not apply to any part of the public lands and reservations of the United States included within the project boundary.

(F) The licensee shall serve copies of any Commission filing required by this order on any entity specified in this order to be consulted on matters related to that filing. Proof of service on these entities must accompany the filing with the Commission.

(G) This order is issued under authority delegated to the Director and is final unless appealed to the Commission by any party within 30 days from the issuance date of this order. Filing an appeal does not stay the effective date of this order or any date specified in

this order. The licensee's failure to appeal this order shall constitute acceptance of the license.

Environmental Assessment¹

Federal Energy Regulatory Commission
Office of Hydropower Licensing
Division of Project Review

Date: June 16, 1989

Project name: Gill Mill, D Wheel, Hydroelectric Project

FERC Project No. 2775-001

A. Application

1. Application type: New minor license
2. Date filed with the Commission: November 25, 1988
3. Applicant: Linweave, Inc.
4. Water body: Holyoke Canal; River basin: Connecticut
5. Nearest city or town: Holyoke (See figure 1.)
6. County: Hampden; State: Massachusetts

B. Purpose and Need for Action

1. Purpose.

Linweave estimates the average annual energy generation of the Gill Mill, D Wheel, Hydroelectric Project is 1,790 megawatt-hours. Project power is sold to the Fitchburg Gas and Electric Light Company.

2. Need for power.

The power from the project is useful in meeting a small part of the need for power projected for the New England Power Pool area of the Northeast Power Coordinating Council (NPCC) region. Power generated at the project displaces fossil-fueled power generation in the NPCC region, thus conserving nonrenewable fossil fuels and reducing the emission of noxious byproducts caused by the combustion of fossil fuels.

C. Proposed Project and Alternatives

1. Description of the proposed action. (See figure 2.)

The existing operating project was issued an initial license in 1977, which will expire in 1991. The licensee has filed for a new license for the continued operation of the project. The existing operating project consists of: (i) a gated intake with submerged trashracks located on the second level canal of the Holyoke Water Power Company; (ii) a 12-foot-

¹ Figures and attachments referenced in the text are omitted from this document due to reproduction requirements.

diameter penstock 295 feet long; (iii) an existing 450-kW generating unit located within the Gill Mill building; (iv) two parallel 7-foot-wide by 10-foot-high arched brick-lined tailrace tunnels extending from the draft tube to an existing outlet structure; (v) a concrete gated outlet structure where tailwater empties into a channel that leads to the Connecticut River; (vi) a 13.8-kV transmission line 660 feet long that connects the project to an existing transmission line; and (vii) appurtenant facilities. The project operates in a run-of-river mode. Linweave does not propose any construction or change in project operation. The Holyoke Water Power Company controls flows from the Connecticut River into the canal system under a FERC major license granted to Project No. 2004.

2. Applicant's proposed mitigative measures.

Since Linweave proposes to continue operating the project as in the past, with no new construction, no changes to the hydroelectric project, and no changes in the use and release of water, Linweave proposes no mitigative measures.

3. Federal lands affected.

No.

4. Alternatives to the proposed project.

a. *Issuance of an annual license.* Section 15(a) of the Federal Power Act (Act), 16 U.S.C. § 808(a), provides for the issuance of annual licenses to the prior licensee if the license expires pending the relicensing determination. Under this alternative, an annual license would continue to be issued to Linweave until a new license is issued. The annual license contains the same terms as the expired license, thereby maintaining the status quo.

b. *Issuance of a non-power license.* Section 15(f) of the Act, § 808(b), authorizes the Commission to issue a license for nonpower use when the Commission "finds that in conformity with a comprehensive plan for improving or developing a waterway or waterways for beneficial public uses all or part of any licensed project should no longer be used or adapted for use for power purposes." A license that is granted by the Commission for nonpower use is temporary. When the Commission finds that a state, municipality, interstate agency, or another federal agency is authorized and willing to assume regulatory supervision of the lands and facilities included under the nonpower license and does so, the Commission shall thereupon terminate the nonpower license.

c. *Denial of the license application.* Denial of the license application could lead to removal of the power facilities and removal of all project works.

D. Consultation and Compliance

1. Fish and wildlife agency consultation (Fish & Wildlife Coordination Act).

a. U.S. Fish & Wildlife Service: Yes.

b. State(s): Yes.

c. National Marine Fisheries Service: Yes.

2. Section 7 consultation (Endangered Species Act).

a. Listed species: Present.

b. Consultation: Not required.

Remarks: The federally listed endangered shortnose sturgeon under the jurisdiction of the National Marine Fisheries Service (NMFS) inhabits the lower segment of the Connecticut River from the river's mouth upstream to the Holyoke dam. A small landlocked population is found in the pool above the Holyoke dam (Taubert, 1980). Dadsell, *et al.* (1984) estimated that between 800 and 1000 shortnose sturgeon inhabit the lower portion (below Holyoke) of the Connecticut River. The NMFS reports that due to the trashrack spacing, any sturgeon which might enter the canal would be prevented from entrainment into the project (personal communication, Chris Mantzaris, staff, National Marine Fisheries Service, Gloucester, Massachusetts, June 13, 1989).

3. Section 401 certification (Clean Water Act).

Required; applicant requested certification on 10/17/88.

Status: Granted by the certifying agency on 03/30/89.

4. Cultural resource consultation (Historic Preservation Act).

a. State Historic Preservation Officer: Yes.

b. National Park Service: Yes.

c. *National Register* status: Eligible or listed.

d. Council: Not required.

e. Further consultation: Not required.

Remarks: The project is adjacent to the Holyoke Canal System, a property listed in the *National Register of Historic Places*. Since there would be no redevelopment, new construction, or changes to the exterior of the property, the project would not affect the canal system or any other *National Register* or eligible properties. The SHPO concurs with this finding (letter from Valerie A. Talmage, Executive Director, Massachusetts Historical Commission, and State Historic Preservation Officer, Boston, Massachusetts, December 9, 1988).

5. Recreational consultation (Federal Power Act).

a. U.S. Owners: No.

b. National Park Service: Yes.

c. State(s): Yes.

6. Wild and scenic rivers (Wild and Scenic Rivers Act).

Status: None.

7. Land and Water Conservation Fund lands and facilities (Land and Water Conservation Fund Act).

Status: None.

E. Comments

1. The following agencies and entities provided comments on the application or filed a motion to intervene in response to the public notice dated 03/24/89.

<i>Commenting agencies and other entities</i>	<i>Date of letter</i>
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Department of the Army, New England Division Corps of Engineers	05/11/89
Environmental Protection Agency	05/17/89
Department of the Interior	05/19/89
Massachusetts Division of Fisheries and Wildlife	05/30/89

<i>Motions to intervene</i>	<i>Date of motion</i>
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City of Holyoke, Gas and Electric Department	03/28/89
Holyoke Water Power Company	05/24/89

2. The applicant did not respond to the comments or motion(s) to intervene.

F. Affected Environment

1. General description of the locale. (See figure 3.)

a. Description of the Connecticut River Basin.

The Connecticut River Basin, with a drainage area of 11,765 square miles, is the largest river basin in New England. Extending from the northernmost part of New Hampshire to Long Island Sound, the river basin has a maximum length in a north-south direction of about 280 miles and a maximum width of about 62 miles. The total drainage area of the basin is 11,765 square miles. The principal tributaries to the mainstem Connecticut River, by state, are the Passumpsic, White, West, Ottawa-quechee, and Black Rivers in Vermont; the Ammonoosuc, Mascoma, Ashuelot, and Sugar Rivers in New Hampshire; the Millers, Deerfield, Chicopee, and Westfield Rivers in Massachusetts; and the Farmington River in Connecticut.

This complex of rivers and tributaries constitutes one of the most extensively developed hydropower systems in the U.S. There is now a major effort by federal, state, and private sectors to restore Atlantic salmon to the Connecticut River Basin.

The project is located in a heavily industrialized setting between the second level of the Holyoke Canal system and the Connecticut River. The climate is typical of inland Connecticut and Massachusetts with an average temperature of 49.8 degrees Fahrenheit and an average annual precipitation of 44.39 inches.

b. Licensed and exempted projects.

There are 62 existing licensed projects and 38 exempted projects in the Connecticut River Basin, as of June 1, 1989.

c. Pending applications.

There are 10 pending license applications in the Connecticut River Basin, as of June 1, 1989.

d. Cumulative impacts.

Cumulative impacts are defined as impacts on the environment that result from the incremental impacts of an action when added to other past, present, and reasonably foreseeable future actions regardless which agency or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (40 C.F.R., Part 1508.7).

A target resource is an important resource that may be cumulatively affected by multiple development within a basin. The staff identified Atlantic salmon as the target resource in the Connecticut River Basin (Federal Energy Regulatory Commission, 1986). The selection was based on the regional significance and geographic distribution of this species within the river basin. This anadromous fishery resource is described below in section F(2d). Impacts to Atlantic salmon are discussed in section G.

2. Descriptions of the resources in the project impact area (Source: Linweave, Inc., application, exhibit E, unless otherwise indicated).

a. *Geology and soils*: Bedrock in the project area is interbedded sandstone, shale, conglomerate, and basaltic lava. The glacial till deposits that lie on the glaciated surface of the bedrock are overlain by varied glacial lake deposits. The original dry, sandy, surface soils in the project area have been highly altered by construction of the project and by fill and construction activities associated with urban development of the area.

b. *Streamflow*: Water flow in the canal system is controlled at the canal gatehouse in order to supply necessary water to various hydropower and industrial facilities along the

canal. The amount of flow entering the canal system ranges from no flow, when the gate-house is shut down, to 5,155 cubic feet per second, which is the maximum hydraulic capacity of the canal.

c. *Water quality:* The Connecticut River upstream of Holyoke dam is classified as Class B water by the Massachusetts Division of Water Pollution. Class B water is suitable for primary and secondary contact recreation and fish and wildlife resources. Class B water must have dissolved oxygen (DO) levels greater than 5.0 milligrams per liter (mg/l) and a pH between 6.5 and 8.0. The first level canal is classified as Class C. Class C water is suitable for secondary contact recreation and fish and wildlife resources and must have a DO level greater than 5.0 mg/l and a pH between 6.5 and 9.0 standard units. Water in the project area conforms to the state water quality standards.

d. *Fisheries:*

Anadromous: Present.

Anadromous fish species found in the Connecticut River in the vicinity of the project include American shad, Atlantic salmon, blueback herring, sea lamprey, striped bass, shortnose sturgeon, and American eel (catadromous).

Resident: Present.

Resident fish species found in the Connecticut River in the vicinity of the project include carp, channel catfish, smallmouth bass, largemouth bass, spottail shiner, white perch, bluegill, rainbow trout, and brown trout.

e. *Vegetation:* Dominant vegetative species in the vicinity of the project include oak, maple, white pine, pitch pine, grasses, and ornamental shrubs.

f. *Wildlife:* Undeveloped land in the project area provides habitat for the gray squirrel, eastern cottontail rabbit, raccoon, muskrat, beaver, weasel, pheasant, and small field mammals (mice and voles). The industrial area is inhabited by English sparrows, starlings, robins, mockingbirds, Norway rats, raccoons, and eastern cottontail rabbits.

g. *Cultural:*

There are properties listed on, or eligible for listing on, the *National Register of Historic Places* in the project impact area.

Description: The Holyoke Canal System, a contributing element in the Holyoke Canal Historic District, is listed on the *National Register of Historic Places* and is within the area of the project's potential environmental impact. The portion of the canal in the project area was constructed between 1854 and 1857.

h. *Visual quality:* The project is in an industrial area. Its appearance is consistent with that of the surrounding buildings and structures.

i. *Recreation:* The immediate project area receives no significant recreational use because of its location in a highly industrialized area. No recreational facilities are located at the project. Recreational facilities including playgrounds, swimming pools, and a skating rink are available for use within walking distance of the project. The Connecticut River in the project vicinity is used for boating and fishing.

j. *Land use:* The project is entirely within the city of Holyoke. Land in the project area is primarily used for commercial, industrial, and residential purposes. The canal system is used for generating hydroelectric power at several locations.

k. *Socioeconomics:* The socioeconomic well-being of the area is influenced by industrial and urban development.

G. *Environmental Issues and Proposed Resolutions*

There are 3 issues addressed below.

1. *Cumulative impacts on Atlantic salmon resulting from developing several hydropower projects in the Connecticut River Basin:* The Atlantic salmon is currently a primary target species for a major federal, state, and private sector restoration effort. The goal of the restoration program is to provide and to maintain a sport fishery for Atlantic salmon in the Connecticut River, and to restore and maintain a spawning population in selected tributaries (Federal Energy Regulatory Commission, 1986).

Seaward migrating salmon smolts in the river basin pass numerous hydropower developments where they may become entrained and impinged. The more hydropower facilities outmigrating fish have to pass, the greater the fish losses. Among these hydropower facilities are the Holyoke dam and the canal system.

When river discharges are high and water is flowing over the dam, migrating fish pass downstream with little or no delay (Northeast Utilities Service Company, 1984). On the other hand, outmigrating fish would be entrained into the canal system by high flows entering the canal if they arrive at the dam when flashboards, permitting little or no spillage, are in place. Once in the canal, escape is very difficult. Fish can then be entrained in the turbines of hydropower plants operating along the canal.

On February 26, 1988, the Commission ordered the Holyoke Water Power Company (HWPC) to spill water over Holyoke dam when

salmon smolts are migrating downstream (Federal Energy Regulatory Commission, 1988a). [HWPC is the licensee for the Hadley Falls Project (FERC Project No. 2004) and the entity that controls the dam and the water going into the canal.] Spilling water over the Holyoke dam allows migrating salmon smolts to pass safely downstream in the spill, instead of entering the canal system.

Canal users and the HWPC have since implemented an economic dispatch agreement, in which the HWPC passes all flow downstream at the Holyoke dam and sells the users electricity, instead of water, when salmon smolts are migrating downstream. Linweave participates in this agreement. This arrangement prevents flow from entering the canal and attracting outmigrating Atlantic salmon, and minimizes the number of outmigrating Atlantic salmon trapped in the canal, and the number of project-related impacts to fish in the river basin.

Continuing to operate the Gill Mill, D Wheel, Hydroelectric Project would not contribute to cumulative adverse impacts on Atlantic salmon.

2. *Authority to prescribe fish passage facilities.* The Department of the Interior states that fish passage facilities may be needed at the project in the future, and, by letter of May 24, 1989 they reserve the authority to prescribe such fish facilities. The Commission reserves authority to require the licensee to provide fishways, as may be prescribed by the Secretary of Interior pursuant to section 18 of the Federal Power Act, if the need arises in the future.

3. *Entraining fish in the intake structure:* The Massachusetts Division of Fisheries and Wildlife (DFW) recommended the trashracks at the intake structures have a bar spacing not greater than 1 inch to prevent the entrainment of fish. The project's intake opening includes trashracks with one-inch slot width spacing between bars. The bar spacing at the existing structure satisfies the DFW's recommendation.

H. Environmental Impacts

1. Assessment of impacts expected from the applicant's proposed project (P), with the applicant's proposed mitigation and any conditions set by a federal land management agency; the proposed project with any additional mitigation recommended by the staff (Ps); and any action alternative considered (A).

Assessment symbols indicate the following impact levels:

O = None;	1 = Minor;
2 = Moderate;	3 = Major;
A = Adverse;	B = Beneficial;
L = Long-term;	S = Short term.

Resource	P	Impact Ps	A
a. Geology-Soils	0		
b. Streamflow	0		
c. Water quality:			
Temperature	0		
Dissolved oxygen	0		
Turbidity and sedimentation	0		
d. Fisheries:			
Anadromous	0		
Resident	0		
e. Vegetation	0		
f. Wildlife	0		
g. Cultural:			
Archeological	0		
Historical	0		
h. Visual quality	0		
i. Recreation	0		
j. Land use	0		
k. Socioeconomics	0		

2. Recommended alternative (including proposed, required, and recommended mitigative measures):

Proposed project.

3. Reason(s) for selecting the preferred alternative.

The power generated at this project is produced without any known adverse environmental impacts.

I. Unavoidable Adverse Impacts of the Recommended Alternative

There are no known adverse impacts.

J. Conclusion

Finding of No Significant Impact. Approval of the recommended alternative [H(2)] would not constitute a major federal action significantly affecting the quality of the human environment; therefore, an environmental impact statement (EIS) will not be prepared.

K. Literature Cited

- Dadswell, M.J., B.D. Taubert, T.S. Squires, D. Marchette, and J.L. Buckley. 1984. Synopsis of biological data on shortnose sturgeon (*Acipenser brevirostrum*) Lesueur 1818. National Oceanic and Atmospheric Administration Technical Report NMFS 14, National Oceanic and Atmospheric Administration, Washington, D.C., 45pp.
- Linweave, Inc: 1988. Application for minor license for the Gill Mill, D Wheel, Hydroe-

lectric Project, FERC Project No. 2775, Massachusetts. November 25, 1988.

1989a. Supplement to the application for minor license for the Gill Mill, D Wheel, Hydroelectric Project, FERC Project No. 2775, Massachusetts. February 21, 1989.

1989b. Additional information for the application for minor license for the Gill Mill, D Wheel, Hydroelectric Project, FERC Project No. 2775, Massachusetts. March 20, 1989.

Northeast Utilities Service Company. 1984. Review of cancelled Atlantic salmon smolt (*Salmo salar*), radiotelemetry study at the Holyoke dam, Massachusetts. Hartford, Connecticut. September 1984.

Federal Energy Regulatory Commission. 1983. Planning status report for the Connecticut River Basin. Washington, DC. August 1983.

1986. Environmental assessment for the Connecticut River Basin. Washington, DC. November 7, 1986.

1988a. Order amending license for the Hadley Falls Project, FERC Project No. 2004, Massachusetts. February 26, 1988 [42 FERC ¶ 62,166].

1988b. Environmental assessment for the Number 2 Hydro Unit, FERC Project No. 2387, Holyoke, Massachusetts. August 26, 1988.

Taubert, B.D. 1980. Biology of shortnose sturgeon (*Acipenser brevirostrum*) in the Holyoke Pool, Connecticut River, Massachusetts. Ph.D. Thesis. University of Massachusetts, Amherst, 136 pp.

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Safety and Design Assessment

Gill Mill (D Wheel) Hydroelectric Project

FERC Project No. 2775-001, MA

Project Safety

The applicant for the Gill Mill (D Wheel) Project is Linweave, Inc., a manufacturer of paper products. No dam or spillway is included in the project works. All water is delivered to the project via the Holyoke Second Level Canal, which is owned and operated by the Holyoke Water Power Company (HWP).

The New York Regional Office (NYRO), in an Operation Inspection Report dated October

10, 1986, indicated that the existing project had no downstream hazard potential. Since there is no dam, the staff concludes that there are no dam safety problems.

Project Design

The existing project works consist of: (1) a gated intake with submerged trashracks located on the Second Level Canal of the HWP; (2) a 295-foot-long, 12-foot-diameter steel penstock; (3) a single runner, Francis turbine directly coupled to a 450-kilowatt (kW) Westinghouse generator; (4) two 125-foot-long, 7-foot-wide by 10-foot-high arched, brick-lined tailrace tunnels; (5) a concrete gated outlet structure where the tailwater empties into a channel that leads to the Connecticut River; and (6) appurtenant facilities. The 310-foot-long by 325-foot-wide Gill Mill building which houses the generating equipment is not considered part of the project works.

The primary transmission lines to be included in a new license for Project No. 2775 can be described as a 660-foot run of three-phase, 0.6-kilovolt (kV) overhead line extending from the 0.6-kV terminals of the project generator to the 0.6-kV terminals of the Mt. Tom step-up transformer; and a 90-foot run of three-phase, 13.8-kV overhead line extending from the 13.8-kV terminals of the Mt. Tom step-up transformer bank to the 13.8-kV substation owned by the Holyoke Water Power Company (HWP).

In addition to the primary lines, the new license should include the single-runner Francis turbine, the 450-kilowatt (kW) Westinghouse generator, all necessary switchgear, all installed electrical protection and control apparatus, and all instrumentation. No step-up transformer is included since Project No. 2775 shares the kilovoltampere (kVA) capacity of the Mt. Tom step-up transformer bank.

The applicant has proposed no new construction or improvements for the existing project; therefore, the project license does not need to include any special engineering articles.

The NYRO October 1986 Operation Inspection Report cited no deficiencies in project safety or operation. There is no dam within the project boundaries.

The staff concludes that the project would be safe and adequate if operated in conformance with the terms of a new license.

Water Resource Planning

The project works would contain one 450-kW generator directly connected to a Francis turbine. The gross head at the site ranges from 24 to 32 feet depending upon the tailwater elevation and the average head is 30 feet. The design head of the turbine is 32 feet and its

hydraulic capacity is estimated to be 161 cubic feet per second (cfs). The applicant indicated that the project generated 1,790 megawatthours (MWh) annually. The staff finds that the plant factor would be 45 percent. The project would continue to be operated manually in a run-of-river mode.

All water to the project is delivered via the Second Level Canal. The Second Level Canal is one of a series of three canals (First Level Canal, Second Level Canal, and Third Level Canal) that receives water from the Hadley Falls Project (FERC Project No. 2004) on the Connecticut River. The HWP owns and operates the Hadley Falls Project and its canal system, which delivers water to various manufacturing and other business concerns for process purposes and power generation. The applicant for the Gill Mill (D Wheel) Project is Linweave, Inc.

The water for power generation is allocated in the form of mill powers (mp) to owners of lands adjacent to the canal system, under indentures or contracts between the individual property owners and the HWP.

These "mp" quantities vary according to water flow in the Connecticut River and fall into the following three categories:

Permanent power - the amount of water sold to Linweave whenever the average daily river flows in the Connecticut River are equal to or greater than 3,100 cfs.

Surplus power - water offered for sale to owners of the so-called permanent power rights whenever average river flows in the Connecticut River are equal to or greater than 3,600 cfs.

Non-permanent power - water which is not guaranteed, but which would be furnished when there is more than a sufficient quantity of water in the river to supply all the permanent power owners together with 50 percent of it as surplus. Water would be supplied 6 days a week (but not on Sundays or holidays) when the river flows are equal to or greater than 3,865 cfs. Sunday and holiday operation is allowed when the average river flows exceed approximately 4,300 cfs.

Under the allocation terms of the indentures, Linweave is entitled, in perpetuity, to draw a carefully prescribed quantity of water from the HWP canal system for power generation and discharge it into the Connecticut River below the project. Linweave is also entitled to purchase and use such surplus water as the HWP makes available from time to time.

The Gill Mill (D Wheel) Project is authorized one type of water allocation rights based on the indentures: non-permanent. For non-permanent power allocations, the Gill Mill (D Wheel)

Project is authorized to withdraw 5.2 mp or 150 cfs. Based on the staff's flow duration curve for the Connecticut River, the applicant can withdraw 150 cfs about 87 percent of the time. Whenever the flows in the Connecticut River exceed 15,000 cfs, the applicant can withdraw the maximum hydraulic capacity of the turbine unit, which is 161 cfs, from the Second Level Canal. The staff estimates that this could occur about 31 percent of the time.

The applicant has estimated that the project operates at its maximum capacity (161 cfs) about 26 percent of the time, and at its non-permanent allocation (150 cfs) about 58 percent of the time. Based on the applicant's estimates, the project would be shut down 16 percent of the time. The NYRO 1986 Operation Inspection Report indicated that the canal system is shut down 3 times a year: once in April, once in July, and once in October. During those periods, the canal system is drained, inspected, and repaired if needed. The repairs are generally scheduled for the July shutdown.

There are certain periods of the year when the project cannot operate and the applicant is directed by the HWP to discontinue drawing water from the canal system. These periods include: (1) periods when the canal system is dewatered for inspection and maintenance; (2) periods of low flow in the Connecticut River when a public authority has required that the low flows be released at the Hadley Falls Project rather than through the canals according to the indentures, without generating power; and (3) periods when a public authority requires that the waters of the Connecticut River flow through the HWP's hydroelectric generating facilities at the Hadley Falls Project rather than through the canal system according to the indentures. During the latter periods when the HWP generates power at the Hadley Falls Project rather than releases water through the canal system, the applicant is entitled to compensation in kilowatthours (in lieu of water) under the terms of the Water Use Agreement (or Economic Dispatch Agreement). In 1987, the compensation provided under the Economic Dispatch Agreement amounted to 1,545 MWh for the eight projects owned by the applicant.

The staff's independent analysis shows that the applicant makes reasonable use of its allocated water. Because of the water allocation limits of the HWP, the applicant cannot develop additional potential at the site. Hence, the staff concludes that the applicant has properly developed the head and hydraulic potential of the site.

The August 1983 Planning Status Report for the Connecticut River Basin lists 19 existing hydroelectric projects, including the Gill Mill

(D Wheel) Project, which are located on the canal system owned by HWP. The applicant owns eight of these projects. The report also listed the Holyoke Project on the canal system as a potential project with an installed capacity of 1,222 MW and an annual generation of 13,165 MWh. The report did not indicate any proposed project on the canal system that would be in conflict with the Gill Mill (D Wheel) Project.

The staff's review of the state and federal agency comments and of seven comprehensive resource development plans identified no plans with which the existing project would be in conflict within this reach of the Second Level Canal. The staff presently has no specific comments or recommendations from reviewing agencies addressing flood control, navigation, or water supply requirements for the Second Level Canal. No competing applications for the project are currently pending before the Commission.

The City of Holyoke, Massachusetts Gas and Electric Department, and the HWP filed petitions to intervene in the licensing proceeding. Neither party opposes the issuance of a license, but each want to protect its interests. The HWP submitted a series of technical comments correcting certain information in the application. None of the corrections affect this report.

The generation from this project is equivalent to generation produced from burning 2,940 barrels of oil or 830 tons of coal annually in a steam-electric plant.

In summary, the staff's analysis shows that the existing project is properly designed to develop the hydropower potential of the site.

Economic Evaluation

The proposed project would be economically beneficial, so long as the projected levelized

cost is less than the levelized cost of alternative energy and capacity.

In the case of the Gill Mill (D Wheel) Project, the applicant has proposed no new construction. Hence, the levelized project costs would be the operation and maintenance costs and administrative and general costs. These costs are small compared to the value of the power.

The applicant currently sells the project power to Fitchburg Gas & Electric Light Company, pursuant to a power sales agreement dated March 25, 1982, and it would continue to do so.

The staff concludes that the existing project is economically beneficial.

Exhibits

The staff concludes that the following parts of exhibit A and the following exhibit F drawings conform to the Commission's rules and regulations. The staff therefore includes these in the license:

Exhibit A - The following sections of exhibit A filed November 25, 1988:

The turbine and generator description on page A-2; the transmission line description on pages A-2 and A-3, as corrected by letter dated April 10, 1989; and the additional mechanical and electrical equipment description on pages A-1 through A-7.

<i>Exhibit</i>	<i>FERC No.</i>	<i>Showing</i>
F-1	2775-3	Site Plan
F-2	2775-4	Powerhouse Plan and Elevation

Preparers

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