

UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

47 EERC 162,296

Central Maine Power Company

Project No. 2528-002 -
MaineORDER ISSUING NEW LICENSE
Major Project

(Issued June 29, 1989)

The Central Maine Power Company (CMP/applicant) has filed an application for new license under Part I of the Federal Power Act (Act) to construct, operate and maintain the Cataract Hydro Project, located in York County, Maine, on the Saco River, a navigable waterway of the United States. 1/ The license for the project, which was issued on August 20, 1968, with an effective date of January 1, 1938, expired on December 31, 1987. The project is presently being operated under an annual license.

Notice of the application has been published. The comments filed by agencies and individuals have been fully considered in determining whether to issue this license. A timely motion to intervene was filed August 14, 1986, by the Maine Department of Environmental Protection to become a party to any subsequent proceedings. On May 11, 1988, the Saco River Salmon Club, American Rivers, Inc., the North Conway Chapter of Trout Unlimited, the Natural Resources Council of Maine, and Trout Unlimited (movants) filed a motion to intervene citing the need for a comprehensive fish passage plan for the Saco River. The Commission, by order dated August 3, 1988, denied the petition because it was untimely and the movants' interest were determined to be adequately represented by other parties to the proceeding.

The motions to intervene and comments filed by agencies and individuals have been fully considered and discussed on pages 3-4 of the environmental assessment (EA) attached to the order.

Comprehensive Plans

The amendments to Sections 4(e) and 10(a)(2) of the Federal Power Act (Act) made by the Electric Consumers Protection Act (ECPA) reinforced the Commissions pre-ECPA responsibility to consider and balance; aspects of the public interest in determining whether, and under what conditions, a hydroelectric license should be issued. Thus, in considering the Cataract Project examined in the EA and recommendations of the EA, all public interest considerations must be balanced and weighed and equal consideration must be given to the purposes specified in Section 4(e) of the Act, including the improvement and utilization of water power development and the protection,

1/ See 14 FPC 839,840 (1955)

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mitigation, and enhancement of fish and wildlife resources in the Saco River.

As discussed in the EA, section I., the project would generate 50.5 gigawatts (GWh) of electrical energy per year. The project also provides for long-term energy conservation and displacement of fossil-fueled electric power plant generation for the betterment of air quality and the conservation of fossil fuels.

The EA on the Cataract Project evaluates the effects of project operation on the environmental resources of the project area and provides a discussion of mitigative measures that should be implemented to protect and enhance these environmental resources. The mitigative measures include: (1) minimum flows; (2) measures to provide and monitor upstream and downstream fish passage; (3) modification of the headpond drawdown regime; (4) measures to monitor recreational use at the project and provide additional boat access; and (5) measures to protect cultural resources.

The beneficial effects on the environment that result from the development of this project would be associated with the requirement for the licensee to construct and operate upstream and downstream fish passage facilities, maintain boating access and provide a non-polluting source of electrical power which derive the energy from a renewable source.

Finally, staff believes that the project as conditioned would 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.

Alternatives to issuing a new license for the Cataract Project were also considered by the staff. These alternatives include denial of a license and various actions which would lead to removal of the project. Staff concluded that removal of the project would have significant environmental effects and is not the recommended alternative for two reasons: (1) the environmental effects of continued operation of the project would be minor; and (2) the electricity generated from a renewable resource would be sold to CMP customers, thus reducing the use of existing fossil-fueled, steam-electric generating plants and nuclear generating plants.

Section 10(a)(2) of the Act also requires the Commission to consider the extent to which a project is consistent with federal or state comprehensive plans (where they exist) for improving, developing, or conserving a waterway or waterways affected by the project.

Under section 10(a)(2), federal and state agencies filed three comprehensive plans that address various resources in Maine. The staff reviewed three plans, all of which were relevant to this project.^{2/} No conflicts were found.

Based upon a review of the agency and public comments filed in this proceeding, and on the staff's independent analysis, the Cataract Hydroelectric Project is best adapted to a comprehensive plan for the Saco River.

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. In the EA for the Cataract Hydroelectric Project attached to and made part of this license, the staff addresses the concerns of the federal and state fish and wildlife agencies, and makes recommendations consistent with those of the agencies.

ECPA FINDINGS

Section 10(a)(2)(C) and Section 15(a) of the Act, as amended by ECPA, require the Commission to consider, in writing, the following factors in issuing new licenses.

Consumption Efficiency Improvement Program (Section 10(a)(2)(c))

The applicant has responded to the request of FERC for information concerning the utility's on-going and planned programs designed to improve the end-use consumption efficiency of electricity's and to reduce the peak demand for capacity in the applicant's service area. The applicant's responses includes two reports which are currently on file with the Maine Public Utilities Commission and which are dated March 1986. One of these reports is entitled, "Energy Management Study, Strategy Phase, Central Maine Power Company." The other is entitled "Energy Management Programs, Services and Plans for 1985-1986, Central Maine Power Company."

These reports illustrate that the applicant has studied and implemented those programs which are designed to conserve electric energy and to reduce the need for additional generating

^{2/} The Saco River: a Plan for Recreational Management, October 1983, Southern Maine Regional Planning Commission; State of Maine Comprehensive Rivers Management Plan, May 1987, Maine State Planning Office; Strategic Plan for Management of Atlantic Salmon in the State of Maine, July 1984, Maine Atlantic Sea-Run Salmon Commission.

resources. The programs include a broad and comprehensive range of practices which have in most cases, been found to be cost-effective throughout the nation. The reports give description of the various programs and, what is most important, give quantitative data on the benefits of their implementation.

The staff also requested the Maine Public Utilities Commission's "published policies, restrictions and requirements" relating to energy conservation and load management. Staff received under covering letter dated February 26, 1987, a copy of Section 6 of the "Annual Report of the Maine Public Utilities Commission." The report is dated February 2, 1987, and Section 6 is entitled "Conservation Programs." This Section discusses energy conservation and load management programs of four investor-owned Maine electric utilities, including those of the applicant. The discussion of the applicant's programs is an abbreviated version of the program information contained in the two reports submitted by the applicant cited above. No adverse criticisms of the applicant's programs are given by the Maine Public Utilities Commission.

Staff concludes that the above cited reports show clearly that the applicant recognizes the substantial benefits which accrue to the utility and to the utility's customers (residential, commercial and industrial) as a result of implementing cost-effective resource and energy management programs. Further, staff concludes, based on a review of the above-cited documents that the applicant has made a good-faith effort to conserve electricity, to reduce the need for additional generating capacity and to comply with the objectives of Section 10(a)(2)(C) of the Federal Power Act as revised by the Electric Consumers Protection Act of 1986.

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 FPA (Section 15(a)(2)(A))

The CMP states that, since obtaining the existing license, it has been committed to meeting the requirements of all the articles, terms, and conditions of the existing license. The CMP maintains that its past performance, in conjunction with its future operations and maintenance plans, and its record of compliance with the requirements of the jurisdictional agencies, demonstrate that it is committed to meeting the future requirements for the continued operation of the project.

Staff's review of the compliance record of the CMP substantiates that the CMP has complied in a good faith manner with all articles, terms, and conditions of its existing license. Also, it appears that the CMP has the financial and personnel

resources necessary to fulfill its obligations under the license and Part I of the FPA. Based on the above, and in consideration of the requirements of the new license, staff concludes that the CMP will be able to comply with the terms and conditions of the new license and other provisions of Part I of the FPA.

The plans of the applicant to manage, operate and maintain the project safely (Section 15(a)(2)(B))

The CMP states that it is operating the generating facilities with a foremost concern for the safety of its employees and the public. Records indicate that there has never been an employee fatality associated with the project's operations. Also, there has been no injury or death to any member of the public within the project boundary. The CMP has adopted an official safety code based on its operating experience, and this code is continually updated. The project is, and will continue to be, operated run-of-the-river which causes no extreme fluctuations, thus posing no project-caused hazard for fishermen and boaters. The CMP has prepared an emergency action plan with a notification procedure to the public in case of a potential threat to life or property downstream.

According to the CMP "Report on the Condition of Concrete at Cataract Hydro Station", dated December 1986, the CMP is providing a continuous surveillance program to monitor cracking of concrete structures caused by the alkali-silicate reactivity in combination with severe environmental conditions. The CMP is providing repair and maintenance of cracks as required. The CMP states that the maintenance program is manageable, and none of it involves a threat to the safety or structural integrity of the facility. The CMP also states that there is no evidence of structural distress or damage caused by loads on concrete structures, and that none of the visible concrete deterioration indicates any lessening of the facility's ability to carry the loads for which it was designed.

Based upon staff's review of the specific information provided by the CMP on various aspects of the project that affect public safety, inspection reports by the Commission's Regional Director, and independent consultant reports filed under Part 12 of our regulations, 18 C.F.R. Part 12 (1987), staff concludes that the CMP's plans to manage, operate, and maintain the project safely, are adequate.

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 CMP states that the addition of the two generating units (rated 480 kW and 420 kW), purchased in 1983, to the licensed project (6,650 kW), will provide greater flexibility in

maximizing total project output. The additional units (West Channel units) will operate in conjunction with the 6,650-kW East Channel unit. The East Channel turbine is a Kaplan design providing high efficiency over a wide range of flows. It will usually be base-loaded with the West Channel units picking up additional flows exceeding the East Channel unit's capacity.

The CMP coordinates the operation of the Cataract Project with the Skeleton Project (FERC No. 2527), located 9.3 miles upstream from the Bradbury and Springs dams. Skeleton controls the inflow to the Bradbury-Springs reservoir. The poundage available in the Skeleton impoundment (23,000 acre-feet) allows for regulation of flows when the river is flowing at rates below the installed turbine capacity. Releases of water are concentrated during the system's heavy load periods to maximize generation during high electrical demand.

The plant is operated in an automatic mode in a manner that maximizes generating efficiency. Maintenance upkeep has included upgrading electrical systems and repairs to the project works.

Operations of the Cataract Project enables the CMP to reduce the loading of its transmission lines and the substation, serving to reduce transmission losses. The hydroelectric plants provide low-cost generating in the CMP's system, and these benefits are expected to increase in the future because of the escalation of fuel costs.

Based on the above considerations, review of the operation inspection reports by the Regional Director, the CMP's past performance, and future plans to operate the project, staff concludes that the project is, and under the new license will continue to be, operated and maintained in an efficient and reliable manner.

The need of the applicant over the short and long term for the electricity generated by the project to serve its customers (Section 15(a)(2)(D))

The applicant has operated the existing Cataract East Channel Project since 1938. The Commission issued a license for this project on August 20, 1968, with an effective date of January 1, 1938, and a termination date of December 31, 1987. Since 1938, when the East Channel Project became operational, the total net output has been utilized by the applicant to serve its customers.

In 1983, the applicant purchased water rights and two additional generating units at the West Channel facility located on the Factory Island. The two generator sets were formerly owned by NKL Tanning, Inc. and have a combined capacity rating of

approximately 900 kilowatts. The land and water rights were previously owned by the Maine Guarantee Authority.

On April 4, 1986, the applicant filed a revised application for a new 50-year license for Project No. 2528. As proposed in the revised application, the applicant plans to incorporate the two recently purchased NKL generators into the new license. The total average energy output of Project No. 2528 would increase to approximately 50,500,000 kilowatthours per year.

The need for the electricity generated by Project No. 2528 to serve the applicant's customer over the short and long terms has been adequately established by the fact that the applicant's customers have been relying upon the output of the East Channel facility for more than fifty years and upon the output of the West Channel facility for more than five years, as low-cost non-polluting sources of reliable power which derive their primary energy from renewable resources.

According to CMP's FERC Form One response, the combined net energy output from the West Channel and East Channel facilities, as operated by CMP, was 42,426,908 kilowatthours in the calendar year 1987.

The applicant's existing and planned transmission services (Section 15(a)(2)(E))

If the applicant is issued a new license, no changes to the existing transmission system, its operation, or operating characteristics are needed. Staff concludes the transmission services are adequate.

Whether the plans of the applicant will be achieved, to the greatest extent possible, in a cost effective manner (Section 15(a)(2)(F))

With regard to the Cataract Hydro Project, the CMP overhauled the equipment, and reduced the overall operation expenses. CMP purchased two additional units to more fully and efficiently utilize the site's hydraulic resources. No further increase in capacity is planned. With the hydraulic capacity of 3,125 cfs, the CMP will adequately utilize the flows of the Saco River.

There are no projects, proposed or constructed on the Saco River, that this project would impact, and neither state or Federal agencies addressed flood control, navigation, water supply or irrigation requirements related to the project in the basin. As to the total project, the recreation resources are in accord with the Commission's policy on recreation and are adequate for meeting the needs of the area.

The staff concludes that the applicant's plans for continued operation of the project will be fulfilled, to the greatest extent possible, in a cost effective manner.

Compliance History Pursuant to Section 15(a)(3) of the Federal Power Act

The compliance record of the Central Maine Power Company with the terms and conditions of its existing license is satisfactory. The licensee has made timely filings and submitte's and has maintained all project facilities in a satisfactory manner.

Failure to comply with the terms or conditions of this license may subject the licensee to the enforcement and penalty provisions of Section 31 of the Federal Power Act.

Terms 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. This provision is consistent with pre-ECPA Commission policy, which was to establish 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/

The applicant proposes a moderate amount of new development to the existing project facilities. Accordingly, the new license for the project will be for a term of 40 years.

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.

3/ See Montana Power Company, 56 F.P.C. 2008 (1976).

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 Central Maine Power Company (licensee), for a period of 40 years, effective the first day of the month in which this order is issued, to construct, operate and maintain the Cataract Hydro Project. This license is 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, enclosed by the project boundary shown by exhibit G:

<u>Exhibit G-</u>	<u>FERC No. 2528 -</u>	<u>Showing</u>
1	8	General Map
2	9	Detail Map - Dams and Powerhouse Areas
3	10	Transmission Line Plan

(2) Project works consisting of: (a) two existing dams the Cataract Dam and the West Channel Dam, the Cataract Dam consists of an overflow section a fixed crest at elevation 40 feet USGS, four 4-foot-high and 90-foot-long flashboards, the West Channel Dam consists of an overflow section with a crest elevation at 40.5 feet USGS with 4-foot-high flashboards; (b) both dams create a 14-acre reservoir with a normal surface elevation of 44 feet USGS with a storage capacity of 1.2 million cubic feet; (c) two additional existing dams the Bradbury Dam and the Springs Dam, the Bradbury Dam consists of two overflow section both with a fixed crest at elevation 47.7 feet USGS and 20-inch pin-type flashboards; (d) both dams create a 359-acre reservoir with a normal surface elevation of 49.2 feet USGS with a storage capacity of 31 million cubic feet; (e) an existing steel and brick powerhouse at the Cataract Dam which contains one turbine/generator with a total rated capacity of 6,650 kW; (f) a powerhouse located near the West Channel Dam in mill building No. 1 on the Factory Island housing two turbine/generators rated at 480 kW and 420 kW for a total rated capacity of 900 kW; (g) a new headgate structure, a covered 600-foot-long flume, and two penstocks, 8 feet and 12 feet in diameter, which connect the flume with the two existing units at the West Channel powerhouse; (h) a three-phase, 11.5-kilovolt (kV) line beginning at the 11.5-kV terminals of the East Channel generator and running

underground for about 150 yards to the 11.5-kV terminals of a 11.5/34.5-kV step-up transformer located at the applicant's Factory Island substation; (i) three-phase, 0.6-kV underground cable beginning at the 0.6-kV generator bus of the West Channel facility and continuing for approximately 40 yards under the West Channel structure to the 0.6-kV terminal of an 0.6/12-kV step-up transformer located in a transformer vault of the facility building; and (j) 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 and located within the project boundary, all portable property that may be employed in connection with the project and located within or outside the project boundary, 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) This license is subject to the articles set forth in Form L-4, (October 1975), entitled "Terms and Conditions of License for Unconstructed Major Project Affecting Navigable Waters of the United States", except article 20, and the following additional articles:

Article 201. The licensee shall pay the United States the following annual charge, effective the first day of the month in which this license is issued:

For the purpose of reimbursing the United States for the cost of administration of Part I of the Act, a reasonable 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 10,060 horsepower.

Article 202. The licensee shall clear and keep clear to an adequate width all lands along open conduits and shall dispose of all temporary structures, unused timber, brush, refuse, or other material unnecessary for the purposes of the project which result from maintenance, operation, or alteration of the project works. In addition, all trees along the periphery of project reservoirs which may die during operations of the project shall be removed. All clearing of lands and disposal of unnecessary material shall be done with due diligence to the satisfaction of the authorized

representative of the Commission and in accordance with appropriate federal, state, and local statutes and regulations.

Article 203. Pursuant to Section 10(d) of the Act, a specified reasonable rate of return upon the net investment in the project shall be used for determining surplus earnings of the project for the establishment and maintenance of amortization reserves. One half of the project surplus earnings, if any, accumulated under the license, in excess of the specified rate of return per annum on the net investment, shall be set aside in a project amortization reserve account at the end of each fiscal year. To the extent that there is a deficiency of project earnings below the specified rate of return per annum for any fiscal year under the license, the amount of that deficiency shall be deducted from the amount of any surplus earnings subsequently accumulated, until absorbed. One-half of the remaining surplus earnings, if any, cumulatively computed, shall be set aside in the project amortization reserve account. The amounts established in the project amortization reserved account shall be maintained until further order of the Commission.

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

Article 301. The licensee shall commence construction of the project works within 2 years from the issuance date of the license and shall complete construction of the project within 4 years from the issuance date of the license.

Article 302. The licensee, at least 60 days prior to start of construction, shall submit one copy to the Commission's Regional Director, and two copies to the Director, Division of Inspections, of the final contract drawings and specifications for pertinent features of the project, such as water retention structures, all necessary transmission facilities, the powerhouse, and water conveyance structures. The Director, Division of Dam Safety and Inspections, may require changes in

the plans and specifications to ensure a safe and adequate project.

Article 303. The licensee, within 90 days of completion of construction, shall file for approval by the Commission, revised exhibits A, F, and G, to describe and show the project as-built.

Article 401. The licensee shall discharge from the Cataract Hydroelectric Project, a continuous minimum flow totalling 851 cubic feet per second, as measured immediately downstream from the project powerhouses in the Cataract and West channels of the Saco River, or inflow to the reservoir, whichever is less, for the protection and enhancement of fish and wildlife resources in the Saco River. This flow may be temporarily modified if required by operating emergencies beyond the control of the licensee, and for short periods upon mutual agreement between the licensee and the Maine Department of Environmental Protection (MDEP).

Article 402. The licensee, after consultation with the U.S. Fish and Wildlife Service (FWS), the Maine Department of Environmental Protection (MDEP), and the U.S. Geological Survey, shall develop a plan to install streamflow gauges at the upstream and downstream boundaries of the Cataract Project on the Saco River to monitor the minimum flow as required by article 401. The plan shall include the location and design of the gauges, a schedule for the installation of the gauges, the method of flow data collection, and a provision for providing flow data to the FWS and MDEP within 30 days from the date of a request from these agencies. The plan shall be filed with the Commission for approval within 6 months from issuance of this license and shall include comments from the aforementioned agencies on the plan. The Commission reserves the right to require modifications to the plan.

Article 403. The licensee, within 1 year from the date of issuance of this license, shall file functional design drawings and a construction schedule to install, operate, and maintain fish passage facilities necessary to provide efficient upstream passage of Atlantic salmon, American shad, and alewife at the Cataract, West Channel, Springs, and Bradbury dams and downstream passage at the Cataract and West Channel dams of the Cataract Project. The fish passage facilities must be designed in cooperation with the U. S. Fish and Wildlife Service (FWS), the Maine Atlantic Sea Run Salmon Commission (MASRSC), the Maine Department of Marine Resources (MDMR), the Maine Department of Inland Fisheries and Wildlife (DIFW), and the National Marine Fisheries Service (NMFS). The comments and recommendations of these agencies on the adequacy of the fish passage facilities must be included in the filing. The licensee must file the functional design drawings for Commission approval, and the Commission reserves the right to modify the drawings and the

schedule. The licensee must construct the facilities, as outlined in the construction schedule, and file as-built drawings pursuant to Article 303.

The licensee must also file a monitoring plan and a schedule to evaluate the effectiveness of the fish passage facilities within 1 year from the date of issuance of this license. The monitoring plan must be designed in cooperation with the FWS, the MASRSC, the MDMR, the DIFW, and the NMFS. The licensee must file the monitoring plan, along with comments from the above-mentioned agencies, for Commission approval. The Commission reserves the right to modify the plan and schedule.

The results of the monitoring plan must be submitted to the Commission according to the approved schedule, along with comments from the consulted agencies on the results. If the monitoring results indicate that further measures are necessary to effectively pass Atlantic salmon, American shad, or alewife, the licensee shall provide, for Commission approval, measures necessary to effectively pass migratory fish and a schedule for implementing these measures. These measures shall include structural and operational changes necessary to ensure that migratory fish effectively pass the project.

Article 404. Authority is reserved to the Commission to require the licensee to construct, operate, and maintain, or to 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 405. The licensee, after consultation with the U. S. Fish and Wildlife Service (FWS) and the Maine Department of Environmental Resources (MDEP), shall develop a plan and a schedule for performing annual maintenance cleaning at the Cataract and West Channel dams that provides for the protection of fish resources and water quality in the Saco River. The plan shall include alternatives to the present practice of drawdown of the Cataract headpond, including limiting annual maintenance drawdown, if a drawdown is shown to be necessary, to the period from December 1 through April 1 and to a maximum duration of 36 hours in order to protect the anadromous fishery in the Saco River. The licensee shall file the plan and schedule, along with comments and recommendations from the FWS and the MDEP, for Commission approval within 1 year from the issuance date of this license. The Commission reserves the right to modify the plan and schedule. Until such time of approval for the plan and schedule by the Commission, the licensee shall restrict any drawdown maintenance cleaning to the period December 1 through April 1.

Article 406. The licensee, before starting any ground-disturbing activities within project boundaries, shall

consult with the Maine State Historic Preservation Officer (SHPO). If the licensee discovers previously unidentified archeological or historic properties while constructing or developing project facilities, the licensee shall stop all ground-disturbing activities near the properties and consult with the SHPO. In either instance, the licensee shall file a cultural resource management plan for Commission approval.

The management plan shall be prepared by a qualified cultural resource specialist and shall include: (1) a description of each discovered property indicating whether it is listed on or eligible for listing on the National Register of Historic Places; (2) a description of the potential adverse impacts on each discovered property; (3) proposed measures for avoiding or mitigating impacts; (4) a schedule for mitigating impacts and conducting additional studies; and (5) documentation of consultation with the SHPO.

The licensee shall not conduct ground-disturbing activities, or resume such activities in the vicinity of a property discovered during construction, until the plan is approved by the Commission. The Commission may require changes to the plan.

Article 407. The licensee, after consultation with the United States Fish and Wildlife Service, the Maine Department of Conservation, the Maine Department of Inland Fisheries and Wildlife, the Saco Parks and Recreation Department, and the Saco River Corridor Commission, shall monitor recreational use of the project area, above and below the project dams, to determine whether existing recreational facilities are meeting recreational needs. Monitoring studies shall begin within 5 years of the issuance of the license and shall consist, at a minimum, of annual recreation use data (using recreation days as the unit of measure) and meetings with the consulted agencies every 5 years.

Every 5 years during the term of the license, on the license anniversary, the licensee shall file a report with the Commission on the monitoring results. The report shall include: (1) the annual recreation use data; (2) a discussion of the adequacy of the licensee's recreation facilities; (3) a discussion of the need for additional recreation facilities at the project site; (4) any recreation plans proposed by the licensee to accommodate recreational needs or concerns in the project area; and (5) documentation of agency consultation and agency comments on this report. Any recreation plan included with this report shall be filed for Commission approval and shall consist of drawings and descriptions of the proposed facilities or enhancements to existing facilities, construction or implementation schedules, cost estimates, and a statement of who will be responsible for the construction, maintenance and operation of each proposed facility.

Article 408. The licensee, after consultation with the U.S. Fish and Wildlife Service (FWS), the Maine Department of Conservation (DOC), the Maine Department of Inland Fisheries and Wildlife (DIFW), and the Saco River Corridor Commission (SRCC), and within 3 months of the closure of the Homestead Campground boat launch to public use, shall file for Commission approval a plan for the construction of a carry-in boat launch to be located at the mid-section of the impoundment, preferably at the Route 5 bridge. The plan shall include: (1) a large-scale drawing showing the location of the boat launch, parking area, and any other associated facilities; (2) a construction schedule; (3) cost estimates; (4) a statement of who will be responsible for the construction, maintenance, and operation of the facilities; (5) documentation of agency consultation; and (6) comments from FWS, DOC, DIFW, and SRCC on the final plan. The Commission reserves the right to require modifications to the plan.

Article 409. (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 accommodate 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.

(E) 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.

(F) 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.


Fred E. Springer
Director, Office of
Hydropower Licensing

ENVIRONMENTAL ASSESSMENT
FEDERAL ENERGY REGULATORY COMMISSION
OFFICE OF HYDROPOWER LICENSING, DIVISION OF PROJECT REVIEW

Cataract Hydroelectric Project 1/

FERC Project No. 2528-003--Maine

June 9, 1989

I. APPLICATION

On April 4, 1986, the Central Maine Power Company (CMP) filed an application for a new license for the Cataract Hydroelectric Project, an existing major project greater than 5 megawatts (MW). The CMP supplemented its application on January 19, 1987, June 4, 1987, November 11, 1987, April 28, 1988, and October 28, 1988.

The project is located on the Saco River in the cities of Saco and Biddeford, York County, Maine (figure 1.). The project was constructed in 1938 and a license was issued on August 20, 1968, expiring on December 31, 1987. The CMP presently operates on an annual license.

II. PURPOSE AND NEED FOR ACTION

A. Purpose

The existing project is providing an estimated average annual generation of 50,500,000 kilowatthours (kWh) of electric energy. All the power produced by the project is supplied to the applicant's transmission and distribution system and is then delivered to the applicant's customers.

B. Need for Power

The power from the project provides a substantial fraction of the electric power needs of the applicant's customers. The need for the electricity generated by the project to serve the applicant's customers over the short- and long-terms has been adequately established by the fact that applicant's customers have been relying on output of the project for more than 50 years as a low-cost, non-polluting source of reliable power which derives its primary energy from a renewable resource.

1/ Due to reproduction requirements referenced figures have been omitted.

III. PROPOSED PROJECT AND ALTERNATIVES

A. Proposed Project

1. Project Description

The project consists of the following existing facilities: (1) Cataract, West Channel, Bradbury, and Springs dams; (2) a powerhouse, located at Cataract dam and containing a turbine-generator unit with a capacity of 6,650 kW; (3) a powerhouse located approximately 900 feet downstream of the West Channel dam and containing two turbine-generator units with a total capacity of 900 kW; (4) an intake flume; and (5) appurtenant facilities (figure 2.). Operation of the project would continue to be coordinated with the applicant's upstream projects.

2. Proposed Mitigative Measures

The applicant proposes to:

(1) install upstream passage facilities at Cataract and West Channel, Bradbury and Springs dams, and downstream passage facilities at Cataract and West Channel dams to allow for passage of Atlantic salmon, alewife, and American shad;

(2) operate in a run-of-the-river mode releasing a minimum flow of 851 cfs or inflow, whichever is less, except within the migratory period of April 1 to December 1, when flows sufficient for fish passage would be maintained regardless of inflows; and

(3) maintain the existing boat access sites at the southern extremity of the Skelton project, upstream from the Cataract Project, to ensure public access to the Cataract Project waters, and to maintain the spillway warning signs in good repair at Springs and Bradbury dams.

B. Alternatives to the Proposed Project

1. 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 the applicant. The annual license contains the same terms as the expired license, thereby maintaining the status quo.

2. Federal Takeover

An alternative to issuing a new license for continued operation of the Cataract Project would be takeover of the project by the federal government. Such action can be recommended to Congress by the Commission on its own motion or upon recommendation of a federal department or agency, under the provisions of Section 14 of the Act. If the Commission determines, after notice and opportunity for hearing, that the United States should exercise its right to take over the project, the Commission would submit its recommendation to Congress with such information as it considers appropriate. No entity has recommended Federal take over for the Cataract Project.

3. Issuance of Nonpower License

Section 15(b) of the Act, 16 U.S.C. §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 other federal agency is authorized and willing to assume regulatory supervision of the lands and facilities under the nonpower license and does so, the Commission shall thereupon terminate the license.

4. Denial of License Application

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

C. Alternative of No Action

No action would result in continued project operation on its annual license. This is not a reasonable alternative.

IV. CONSULTATION AND COMPLIANCE

A. Agency Consultation

The Commission's regulations require prospective applicants to consult with the appropriate resource agencies before filing a license application. This prefiling consultation initiates compliance with the National Environmental Policy Act, Fish and Wildlife Coordination Act, Endangered Species Act, National Historic Preservation Act, and other federal statutes. Prefiling consultation must be complete and documented for the application to be accepted. After acceptance, the Commission issues a public

notice and seeks formal comments in accordance with these statutes. All comments become part of the record and are considered during the staff's analysis of the proposed project.

The following entities commented on the application subsequent to the public notice, which was issued on July 28, 1986.

<u>Commenting entity</u>	<u>Date of letter</u>
Maine Office of Energy Resources	August 28, 1986
Department of the Army, Corps of Engineers	September 8, 1986
Environmental Protection Agency	September 17, 1986
Department of the Interior	October 23, 1986
Maine Department of Conservation	November 3, 1986

In addition to providing comments, organizations and individuals may petition to intervene and become a party to any subsequent proceedings. The following entities filed a motion to intervene in the proceedings.

<u>Interveners</u>	<u>Date of motion to intervene</u>
Maine Department of Environmental Protection	August 11, 1986

The applicant responded to the agency comments by letter dated January 29, 1987 and to the petition to intervene by letter date May 25, 1988.

On May 11, 1988, the Saco River Salmon Club, American Rivers, Inc., the North Conway Chapter of Trout Unlimited, the Natural Resources Council of Maine, and Trout Unlimited (movants) filed a motion to intervene citing the need for a comprehensive fish passage plan for the Saco River. The Commission, by order dated August 3, 1988, denied the petition because it was untimely and the movants' interests were determined to be adequately represented by other parties to the proceeding.

B. Water Quality Certification

The applicant requested Section 401 water quality certification by letter dated January 7, 1986. The Maine Department of Environmental Protection (MDEP) did not act on the request for certification within 1 year of its receipt of the request; therefore, water quality certification is considered waived pursuant to Commission Order No. 464 (issued February 11, 1987).

The MDEP by letter dated February 14, 1989, stated that no waiver of certification can be deemed to have occurred, since the MDEP never received a request for certification in accordance

with applicable law governing filings with that agency. After water quality certification had been deemed waived by the Commission, CMP again requested certification from MDEP in a letter dated January 26, 1989. MDEP is processing this request for certification. As of May 24, 1989 MDEP has taken no action on the request.

V. ENVIRONMENTAL ANALYSIS

A. General Description of the Locale

1. Saco River Basin

The project is located between the cities of Saco and Biddeford, Maine. The topography in the project area along the Saco River Valley is glacially formed, of relatively low relief. Land use adjacent to the project area is urban. The average temperature varies from 70 degrees Fahrenheit (°F) in June to 22°F in January. Average annual precipitation, including the water equivalent of snow, averages about 46 inches per year. The area's average yearly snowfall is 91 inches (Central Maine Power Company, 1986).

The combined population of the cities of Saco and Biddeford was 32,500 in 1980 (Central Maine Power Company, 1986).

2. Proposed and Existing Hydropower Development

A number of hydropower projects sites are operational in the Saco River Basin (table 1.). Flows are used when available and the various generating stations operate on a run-of-river basis during high flows, about 40 percent of the time. Otherwise, pondage is used to regulate flows when river flow is below installed wheel capacity (Central Maine Power Company, 1986).

Dams	River mile	FEPC Project No.
Cataract West Channel Bradbury Springs	6	2528
Skelton	16	2527
Bar Mills	19	2194
West Buxton	24	2531
Bonny Eagle	26	2529
Hiram	48	2530

Table 1. Dams on the Saco River (Federal Power Commission, 1964).

3. Cumulative Impacts

Cumulative impacts are defined as impacts on the environment that result from the incremental impacts of an action when added to past, present, and reasonably foreseeable future actions, regardless of what 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 CFR, Part 1508.7).

A target resource is an important resource that may be cumulatively affected by multiple development within the basin. The staff based its selection of target resources on the regional significance and geographical distribution of the resource within the river basin.

Target resource

The staff has identified anadromous fish as a target resource that could be adversely affected in a cumulative manner by multiple developments in the Saco River Basin. The staff based its selection of target resources on the relicense application for the Cataract Project, the written comments from all interested parties, and river-specific reports, plans and studies. The importance of anadromous fish as a target resource is discussed below.

Anadromous fishes in the Saco River Basin are valuable for their contribution to both sport and commercial fisheries. The anadromous fishes inhabiting the Saco River include alewife, American shad, Atlantic salmon, blueback herring, rainbow smelt, Atlantic tomcod, mummichog, threespine stickleback, ninespine stickleback, and striped bass (Dube, 1983). The American eel is a catadromous fish which also occurs in the basin.

Alewife, American shad, and Atlantic salmon are targeted for restoration by the U. S. Fish and Wildlife Service (FWS), the Maine Department of Inland Fisheries and Wildlife (MDIFW), the Maine Atlantic Sea Run Salmon Commission (MASRSC), and the Maine Department of Marine Resources (MDMR) (U. S. Fish and Wildlife Service et al., 1987). At present, fish passage facilities are insufficient for passage of these fishes at the Cataract Project, as outlined in a collective management plan for the Saco River developed by the FWS, the MDIFW, the MASRSC, and the MDMR (U. S. Fish and Wildlife Service et al., 1987). Atlantic salmon is an important sport fish in the basin. American shad are only taken as incidental to the alewife fishery. Alewife are currently harvested in the Cataract Project area for use as lobster bait (U. S. Fish and Wildlife Service et al., 1987). All of these species were historically common in the Saco River Basin (Foster and Atkins, 1868), but have diminished in numbers from adverse impacts associated with dam construction and industrial

development in the Saco-Biddeford area (U. S. Fish and Wildlife Service et al., 1987). Due to the efforts of federal and state agencies to restore anadromous fish to the river and to recent improvements in water quality, the potential for successful anadromous fisheries in the basin has improved. However, inadequate upstream passage and no downstream passage facilities past dams on the Saco River continues to have an adverse cumulative impact on the anadromous fish resources in this river.

B. Proposed Project

The staff has reviewed the proposed project in relation to the environmental resources in the project impact area and has concluded that there would be no relevant or material adverse environmental impacts on geological, aesthetic, or socioeconomic resources. Because no new land disturbing construction activities are proposed, issuance of a new license for the project would have no direct or indirect adverse impact on geological, aesthetic, or socioeconomic resources. No geological, aesthetic, or socioeconomic issues were raised by agencies or individuals. Therefore, these resources are not discussed below.

1. Water Resources

Affected Environment: The Saco River basin drains 1700 square miles in New Hampshire and Maine and empties into the Atlantic Ocean at Saco and Biddeford, Maine. The river basin originates in the White Mountains of New Hampshire and is about 75 miles long, with a maximum width of 44 miles. The Saco River is joined by the Ellis and Swift Rivers in New Hampshire and the Cold River and outlet stream of Kezar Lake at a split in the Saco River in Maine. The Saco River is later joined by the Ossipee and Little Ossipee Rivers before flowing to the river's mouth below the head of tidewater at Saco and Biddeford.

The mean annual flow of the Saco River at the Cataract Project is 2,860 cubic feet per second (cfs). Because inflows to the project area are regulated, in part, by releases from Skelton Dam located about 9.3 miles upstream of Cataract, minimum flows in the project area consist of leakage from Skelton Dam (about 25 cfs). However, high flows have reached a maximum of 63,000 cfs.

The flow regime of the Saco River is run-of-the-river at high discharges (about 40 percent of the time), but is regulated at the applicant's licensed Bonny Eagle Project (FERC No. 2529) to provide power during peaking at lower discharges. The Skelton Project (FERC No. 2527) re-regulates the inflow to the Cataract Project. When operating, Skelton typically passes either 1,500, 3,000 or 3,800 cfs under controlled conditions. The Cataract unit is normally started at the same time as Skelton and is

usually set at the same flow rate as Skelton. Because the water is delayed approximately 2 hours before reaching Cataract, the Springs-Bradbury Pond is drawn down about 2 feet at the beginning of the day and is refilled by the end of the day.

The State of Maine classifies the water of the Saco River in the vicinity of Cataract Project as class C in the area of the project works and class B-2 in the major part of the headpond. The class C designation indicates that the water quality is satisfactory for recreational boating and fishing, and is suitable for fish and wildlife habitat. Unless adequately treated, however, the water is unsuitable for potable water supplies and water contact recreation. The class B-2 designation indicates that the water is suitable for contact recreation in these areas. Dissolved oxygen levels generally exceed state designated standards. Project waters generally meet state standards, except for coliform levels, which occasionally exceed water classification standards.

The Saco River estuary in the city of Biddeford has been identified by the MDEP and the U. S. Environmental Protection Agency (EPA) as a critical water quality problem area (Central Maine Power Company, 1986). MDEP cites the water quality problem as excessive numbers of coliform bacteria in the estuary; the excessive numbers apparently result from combined storm and sanitary sewers and are largely limited to storm events.

There are currently two major secondary discharges and one small primary discharge resulting in 4 million gallons per day of effluent loading into the tidewater area downstream of the dam (Dana Murch, Maine Department of Environmental Protection, May 29, 1984 letter to CMP). During low tide, there is little water left in the estuary except for flows from the Cataract Project. During the scheduled maintenance drawdown of the Cataract headpond, the City of Saco's municipal discharge may create areas of undiluted effluent during low tide. These effluents may also cause a water quality impact when discharges are reduced to leakage flows from Cataract.

Environmental Impacts and Recommendations:

a. Project Operation Minimum flows

The Saco River is regulated by the Bonny Eagle Project and re-regulated, in part, by the Skelton Project, located immediately upstream of Cataract Project. These hydropower projects operate to maximize power production during the peaking hours. Because there is no significant inflow to the Saco River between the Skelton and Cataract Projects, inflow to Cataract is sometimes reduced to leakage from the Skelton Project. The existing license for the Cataract Project contains no provisions for a minimum flow release.

The FWS recommends that a minimum flow of 851 cfs, or inflow to the upstream boundary of the project, whichever is less, be released, in sum, from the Cataract and West Channel dams. This flow approximates the historical unregulated median August flow (Aquatic Base Flow) in the Cataract Project portion of the Saco River. The FWS states that the 851 cfs would not interfere with the current mode of operation and would provide greater protection of the downstream water resources. This recommended minimum flow release would continue to result in daily water level fluctuations in the Springs-Bradbury headpond and in the small pond upstream of the Cataract and West Channel dams, due to inflow fluctuations. In addition, flows in the Saco River downstream of the Cataract Project would continue to approach zero (i.e., only leakage flows from Skelton dam) during non-peaking hours.

The applicant has agreed to this minimum flow recommendation only for the anadromous fish migration period (April 1 to December 1, annually). The applicant also proposed to release flows sufficient for fish passage, totalling up to 160 cfs, at the Cataract dams during the April 1 to December 1 fish migration periods. Staff agrees with the fish passage flows proposed by CMP for the protection of anadromous fishes in the Saco River, but recommends that year-round flows be provided, as recommended by the FWS, to maintain the biotic integrity of the estuary (see fishery resources section).

The applicant also has proposed to supply flows through the Cataract and West Channel headpond sufficient to protect water quality that is under the influence of industrial thermal discharge to these waters. The applicant has agreed to provide cooling water for a refuse incinerator to be built by the Maine Energy Recovery Company (MERC) in the town of Biddeford. The power plant condensers will be cooled by Saco River water taken just above the West Channel dam. MERC is expected to utilize 138 cfs of river flows for cooling water purposes. When the project is shutdown, 250-cfs flowage through the headpond will be necessary to ensure proper dilution and mixing of condenser cooling water to meet MDEP regulations concerning thermal discharges.

The normal operation of the Cataract Project is primarily run-of-river with pondage, and the average outflow is equal to the average inflow with minor pond fluctuation. The proposed mode of operation would not change the existing flow regime of the river, except to provide flows necessary to allow fish passage. The licenses for the Bonny Eagle and Skelton Projects expire in 1993. In the event that operation of these hydropower projects are altered to release minimum flows, the run-of-the-river operating mode of the Cataract Project would minimize the fluctuation in river flow and would protect and enhance the water

resources of the Saco River by minimizing the water level fluctuations below the dam and by reducing associated disruptions of the fish habitat. The release of minimum flows and additional fish passage flows would enhance the anadromous fishery in the Saco River.

To ensure that the project is operating under the minimum flow condition of 851 cfs or inflow, the licensee should install streamflow gages to monitor the flows of the Saco River. The most effective method of maintaining these recommended flows is to measure the inflow to the project impoundment and to release the same amount downstream of the dam when inflow is less than 851 cfs. Thus, the licensee should install a gage that measures inflow to the upstream project boundary and a gage that measures outflow below the lowermost dams. The licensee should file a plan for Commission approval that includes the following: (1) a schedule for installing the gage; (2) the proposed location, design, and calibration of the gage; (3) the method of data collection; and (4) a provision for providing the data to the FWS and the MDEP. The gage should be operated to provide outflow equal to inflow except, as additional flows are necessary to provide fish passage or to maintain temperature requirements in the project area.

b. Water quality

Increases in turbidity and sedimentation, with subsequent negative effects on aquatic resources, are among the most significant, construction-related impacts of hydroelectric development (Rochester et al., 1984). There may be minor, short-term increases in turbidity due to installation of the fish passage facilities. The applicant proposes to supply flows to the Cataract and West Channel dams to ensure dilution and mixing of MERC condenser cooling water sufficient to meet MDEP regulations concerning thermal discharges. There may, however, be minor local increases in water temperature at the location of cooling water discharges. These discharges may temporarily increase the headpond temperature above state standards (Central Maine Power Company, 1986).

CMP annually draws down the Cataract headpond to allow for maintenance cleaning. This is scheduled in the summer to coordinate with local industry vacation periods. The drawdown has typically been of 3-day duration. During this period, flows from the project are reduced to about 25 cfs (leakage from Springs and Bradbury dams) and fish passage downstream of the Springs and Bradbury dams ceases. This drawdown results in adverse impacts to fishes in the headpond, in the fishway, and below the dam (see section on fishery resources).

Because there is an estimated 4 million gallons per day of effluent loading into the tidewater area below the dam, the MDEP

is concerned that low flows into the estuary, during times of low inflow and during the annual maintenance drawdown of the headpond, may create areas of pure, undiluted effluent at low tide. The FWS is also concerned that the natural salinity conditions and the biotic integrity of the estuary may be disrupted by these project operating conditions. MDMR has indicated that there is significant production of shad and alewives in the estuary and is concerned with the effects of saltwater intrusion on this fishery. In addition, the simultaneous drawdown at the Skelton Project creates a period of negligible water flow between the two projects, which may affect the water quality of the river and the habitat of the riverine fishes inhabiting this portion of the Saco River. The staff has determined that the headpond drawdown results in adverse impacts on water quality, estuarine organisms, and fisheries (see fishery resources section for proposed mitigation).

Unavoidable Adverse Impacts:

Operation of the Cataract Project would result in some minor, unavoidable adverse impacts. The headpond above the West Channel dam would be subject to a minor and temporary, local temperature increase in the cooling water mixing zone at the effluence of the MERC refuse incinerator facility. The construction of fish passage facilities may cause some short-term increase in turbidity in the project area, but this minor negative impact would be far out weighed by the beneficial impact of fish passage installation.

3. Fishery Resources

Affected Environment: The Saco River supports numerous resident, anadromous, and catadromous fishes. The anadromous species include alewife, American shad, Atlantic salmon, blueback herring, rainbow smelt, Atlantic tomcod, mummichog, threespine stickleback, ninespine stickleback, and striped bass (Dube, 1983). The American eel is a catadromous fish that also utilizes the Saco River for a portion of its life history. An active sport fishery for striped bass, bluefish, and sea-run salmon exists downstream of the existing Cataract Project. American eel, alewife, and menhaden support small commercial fisheries in the Saco River.

The series of hydropower projects and their associated head ponds on the Saco River creates both lentic and lotic habitat for fishes. Thus, the river upstream of Cataract dam supports a variety of resident fishes, including lake whitefish, rainbow trout, brown trout, brook trout, lake trout, chain pickerel, burbot, banded killifish, brook stickleback, white perch, pumpkinseed sunfish, smallmouth bass, largemouth bass, black

crappie, yellow perch, slimy sculpin, and several species of suckers, bullheads, and minnows (Dube, 1983). Many of the species are important as a recreational fishery (U.S. Fish and Wildlife Service et al., 1987).

The Cataract Project is the lowermost hydropower project on the Saco River, and therefore, also has an influence on estuarine and marine fishes that occur downstream of the project, including Atlantic menhaden, Atlantic herring, Atlantic pollock, Atlantic silversides, bluefish, American sand lance, and Atlantic mackerel. According to Brad Sterl (MDMR regional biologist), commercial fisheries in the estuary include lobster, eel and soft shell clams. "The narrows," a constriction in the river about 1 mile downstream of Cataract Project, is the upriver limit of salinity-dependant fauna (Brad Sterl, cited in Central Maine Power, 1986). Salinity differences in the estuary are dependant upon rainfall, stage of tide, and hydropower operations (Central Maine Power Company, 1986).

The FWS, MDIFW, MASRSC, and MDMR have indicated that inadequate fish passage facilities precludes restoration of three anadromous fishes, including alewife, American shad, and Atlantic salmon in the Saco River. These species were historically common in the Saco River (Foster and Atkins, 1868), but have diminished in numbers due to the influences of dam construction and industrial development in the Saco-Biddeford area (U. S. Fish and Wildlife Service et al., 1987).

Historically, Atlantic salmon migrated upriver, after negotiating the natural falls in the Saco-Biddeford area, to as far as Hiram Falls (about 50 miles upstream), where many were harvested (Foster and Atkins, 1869). The Ossipee and Little Ossipee Rivers, which flow into the Saco River, were also utilized by these sea-run salmon. Some were able to pass Hiram and Swan Falls to reach spawning habitat in New Hampshire (Foster and Atkins, 1868). Dam construction along the Saco River and industrial development, leading to a decrease in water quality, led to the loss of this viable fishery for Atlantic salmon in the early 19th century. Stocking efforts in the late 19th century proved unsuccessful in restoring the salmon fishery (Stilwell and Stanley, 1886). Stocking efforts in the 1970's and 1980's have had limited success, and returning adult salmon have been reported as far upriver as West Buxton Dam (U.S. Fish and Wildlife Service et al., 1987). The MASRSC (1985) reported that 79 salmon were caught from the Saco River by rod reel in 1985.

An assessment of the Atlantic salmon habitat in the Saco River indicates that suitable habitat is available for approximately 1,492 adult Atlantic salmon. An estimated 42,335 smolts could be produced in the drainage were the spawning, nursery, and adult habitat made accessible to Atlantic salmon by improved fish passage (U. S. Fish and Wildlife Service et al.,

1987). Juvenile Atlantic salmon are currently stocked along the Saco River at all CMP projects downstream of Hiram Dam. Stocking of Atlantic salmon is anticipated to begin in the New Hampshire portion of the drainage within the next 5 years (Central Maine Power Company, 1988b).

American shad and alewives were historically important in the lower Saco River. A commercial gill net fishery existed for shad below Biddeford in the 1950's and early 1960's (Foster and Atkins, 1869), but were eliminated due to pollution from textile mills. MDMR has reported that American shad have reestablished a reproducing population in the lower Saco River, although they presently do not represent a significant fishery. Alewives also were abundant in the Saco River, but were adversely affected by development. There is presently a viable gill-net fishery for alewives in the Saco River near the Cataract Project.

Several state and federal resource agencies, principally the MASRSC, FWS, MDIFW, and MDMR, are currently restoring anadromous fishes to the Saco River. The potential for restoration of anadromous fishes in this river have recently improved due to local improvements in water quality. However, inadequate upstream passage and no downstream passage facilities past dams on the Saco River continues to have an adverse cumulative impact on the fish resources in this river. The restoration effort includes, in part, upgrading the existing upriver fish passage facilities, installing downriver fish passage facilities, increasing fishway capacities at the dams, maintaining habitat integrity, and establishing minimum flows. The installation and upgrading of fish passage facilities on the Saco River is being coordinated on a river-wide basis, whereas, establishment of minimum flows is generally being addressed on a project-specific basis.

Environmental Impacts and Recommendations:

a. Minimum Flows: As discussed in the Water Resources section, the FWS recommends that a minimum flow of 851 cfs, or inflow to the upstream boundary of the project be released, in sum, from the Cataract and West Channel dams. This flow approximates the historical unregulated median August flow (Aquatic Base Flow) in the Cataract Project portion of the Saco River. The applicant has agreed to this minimum flow recommendation only for the anadromous fish migration period (April 1 to December 1, annually). Although provision of these minimum flows during the migration period would enhance the anadromous fishery, staff recommends that year-round flows be provided to maintain the biotic integrity of the estuarine and freshwater habitat in the Saco River downstream of the Cataract hydropower facility.

The applicant states that the tides control the water elevation in the river to the head of tide; therefore CMP concludes that the only effect of project operation the applicant foresees is in the salinity in the estuary and that the project has no effect on the availability of aquatic habitat. The applicant further states that losses of freshwater organisms inhabiting the Saco River downstream of the Cataract Project could naturally occur during occasional winter storms when high salinity water is pushed up into the river, and therefore concludes that lack of flows into the Saco River causes no net losses of organisms over that which would naturally occur (Central Maine Power Company, 1988a).

The staff disagrees. Although the quantity of water in the estuary may be primarily under tidal influence, the quality of that water is very strongly influenced by freshwater inputs. Changes in freshwater inflow can alter estuarine flushing characteristics and circulation patterns, and may therefore disrupt the natural physical, chemical, and biological processes in this estuarine system (Department of the Army Corps of Engineers, 1984). Estuaries are among the most highly productive aquatic systems, primarily due to the mixing of fresh and salt water (Odum, 1959). The riverine environment acts as a source of nutrients; a mixing zone of the different salinity waters creates a "nutrient trap", allowing for high levels of primary productivity.

Freshwater flows into estuaries enhance not only primary productivity, but also secondary productivity, both directly and indirectly. For example, oysters are subject to greater levels of parasitism and have decreased harvests when freshwater inflows are reduced to estuaries (Wells, 1959; 1961; Galstoff, 1964). The production of other estuarine species, such as penaeid shrimp and soft shell clams, may also decrease significantly when freshwater inputs to estuaries are reduced (Gunter, 1962; Department of the Army Corps of Engineers, 1984). Because the Saco River downstream of the Cataract Project presently supports an active commercial fishery for soft shell clams, implementation of a year-round minimum flow could enhance the economic benefits of the estuary. Establishment of these minimum flows may also indirectly benefit a variety of estuarine fishes and invertebrates by maintenance of the "nutrient trap" at the saltwater and freshwater interface; the high primary productivity in this area provides food for the organisms in the estuary that support sport and commercial fisheries.

The Saco River, for about one mile downstream of the Cataract Project, is absent of salinity-dependent organisms (Central Maine Power Company, 1986). Because freshwater organisms predominate in this portion of the Saco River, continuous input of fresh water is essential for survival of these populations. Thus, staff concludes that a minimum flow of

851 cfs or inflow, whichever is less, should be provided on a year-round basis into the Saco River downstream of the Cataract Project. The allocation of these flows among the four hydropower facilities should be determined in consultation with the FWS and the MDEP. These flows are to be provided to protect and enhance the freshwater, as well as the estuarine, species inhabiting the Saco River downstream of the Cataract Project.

b. Drawdown

CMP annually draws down the Cataract headpond for a period of 3 days for maintenance cleaning. During the drawdown, about 30 percent of the headpond area is subject to dewatering. Some fishes may be stranded in isolated pools in the headpond and be subject to predation, thermal stress, or poaching. Other fishes inhabiting the headpond may be subject to crowding and thermal stress, although a MDIFW Regional Biologist indicated to CMP that no resident fish were observed in distress in the headpond (Central Maine Power Company, 1986). CMP indicated that the primary impact on anadromous fishes appeared to occur in the fishway, rather than in the headpond. Atlantic salmon are trapped in the pools of the notched weir fishway and have to be manually removed.

Because the drawdown corresponds to migration periods for the targeted anadromous fishes, attraction flows would be lost during this time and the fish may bypass the Saco River estuary or leave the estuary if they have not already ascended Cataract dam. The lack of freshwater inflow to the estuary may also eliminate any downstream movement and input of freshwater organisms (fishes and invertebrates) and nutrients into the tidal portion of the river. Freshwater organisms inhabiting the river downstream of the Cataract Project would be eliminated due to a sudden increase in salinity; although this may occur from natural catastrophic events (e.g., severe storms), loss of project flows during headpond drawdowns would cause decimation of the freshwater organisms inhabiting the most upstream portion of the estuary at a greater frequency than would occur from natural occurrences.

The applicant does not propose cessation of this headpond drawdown for maintenance cleaning. CMP proposes that the fish passage facility be closed before the drawdown and has been willing to discuss a change in the timing and duration of the drawdown. CMP has attempted maintenance cleaning "in the wet," but the techniques attempted thus far have not been very effective in debris removal. The FWS, MDMR, MDEP, and MDIFW all recommended that CMP utilize alternate methods of maintenance cleaning that do not require drawdown of the headpond and cessation of flows below the project. Restoration of Atlantic Salmon in America (RASA) also has expressed concern over the

adverse impacts of this drawdown on the fisheries in the project area.

Due to the adverse impacts on anadromous and estuarine fisheries (see above) and on water quality in the estuary (see water quality section), the staff recommends modification of the practice of drawing down the headpond for maintenance cleaning. The staff recommends a two-phase resolution, including an experimental phase during which alternatives to the present practice of drawdown of the Cataract headpond (as determined through consultation with the MDEP and the FWS) are identified and evaluated, and a resolution phase during which the licensee, the FWS, and the MDEP, develop a long-term plan for maintenance cleaning. If necessary, CMP should be allowed maintenance cleaning drawdowns of the headpond, but these should be limited to the period between December 1 and April 1 to minimize impacts on anadromous fishes and of the shortest possible duration to minimize impacts on water quality in the estuary. Shortening the drawdown period to 36 hours ought to provide sufficient time to complete the maintenance cleaning operation normally done during 3 working days.

Therefore, any license issued for the project should require the licensee to develop a maintenance cleaning plan that addresses the considerations discussed above. Further, the licensee should restrict the practice of maintenance cleaning drawdown to the period December 1 through April 1 and to a duration not more than 36 hours, until such time as the plan is approved by the Commission.

b. Fish passage

Anadromous fish have historically inhabited the Saco River upstream of the Cataract Project. American shad, alewives, blueback herring, and Atlantic salmon currently reproduce in the Saco River, but all species except Atlantic salmon are restricted to the lower reaches of the Saco River downstream of the Cataract facility. Atlantic salmon inhabit the Saco River only as far upstream as the West Buxton dam (U. S. Fish and Wildlife Service et al., 1987).

The Department of the Interior, by letter dated October 14, 1987, reserved the authority to prescribe conditions pursuant to Section 18 of the Federal Power Act to ensure that upstream and downstream fish passage facilities are provided at the project.^{1/}

^{1/} Section 18 of the Act provides: "The Commission shall require construction, maintenance, and operation by a licensee at its own expense of... such fishways as may be prescribed by the Secretary of the Interior or the Secretary of Commerce as appropriate."

Subsequently, after extensive consultation, which included a number of agencies, the FWS concurred with CMP's fish passage proposals, discussed below. Therefore, articles contained in any license issued for the Cataract Project would require construction of fish passage facilities at such time as Interior prescribes.

Atlantic Salmon

Existing fish passage facilities at the Cataract Project consist of a single notched weir and orifice fishway at the West Channel dam. The FWS, the MDIFW, the MASRSC, and the MDMR have identified fish passage facilities at the Cataract Project dams as being inadequate for Atlantic sea-run salmon, American shad, and alewives (U. S. Fish and Wildlife Service et al., 1987). Atlantic salmon presently utilize this fishway, in limited numbers, when river conditions make it accessible. Some salmon are able to jump about 5 feet over the Springs and Bradbury dams when water is spilling over the flashboards, and may swim over the gates at lower water levels (Central Maine Power Company, 1986), but these are inefficient methods of fish passage.

The FWS, MDMR, MASRSC, and MDIFW recommend installation of state-of-the-art upstream fish passage facilities at the Cataract and West Channel, Springs and Bradbury dams. Trapping and trucking of Atlantic salmon from downstream of the Cataract Project in the Saco River was considered as an option for fish passage at these dams, but was rejected due to the handling sensitivity of this species as it passes from salt to freshwater; this method of fish passage also would have precluded the possibility of angling for Atlantic salmon between the Cataract and Skelton Projects. The recommended facilities include new Denil fish ladders for the West Channel, Springs, and Bradbury dams, and a new fish lift for the Cataract dam. The applicant has agreed to install upstream fish passage facilities at all four dams associated with the Cataract Project, as recommended by the FWS. Until these facilities are completed, the Cataract Project would continue to impede Atlantic salmon passage and use of the spawning and rearing habitat upstream of the project in the Saco River.

No downstream fish passage facilities to protect Atlantic salmon moving downstream currently exist at any of the Cataract Project dams. Downstream migration at the Springs and Bradbury dams is accomplished by passing fish over the gates, over the flash boards, or through notches in the flash boards. There is no hydroelectric generation at these dams, and therefore, no possibility of entrainment. There is spillage at the Cataract Project dams during most of the Atlantic salmon outmigration period (Central Maine Power Company, 1986). Atlantic salmon may, however, be subject to injury or mortality if they become

entrained within the project turbines at the Cataract and West Channel dams, the lower two dams in the Cataract Project.

The FWS, MDMR, MASRSC, and MDIFW recommend the installation of downstream fish passage facilities at the Cataract and West Channel dams. CMP has agreed to install downstream fish passage facilities. The final design of these facilities has not been developed, but have been conceptually agreed upon between the agencies and the applicant. The agencies and applicant agree that the upper two dams in the Cataract Project (i.e., Springs and Bradbury) do not impede downstream fish passage, and therefore, downstream fish passage facilities are not needed. The staff agrees that fish passage facilities are only essential at the Cataract and West Channel dams

Because the Cataract Project is the most downstream hydroelectric project on the Saco River, efficient upstream and downstream passage facilities at the Cataract and West Channel dams and upstream passage at the Springs and Bradbury dams are essential to restoration of the anadromous run of Atlantic salmon, in the Saco River and its tributaries. Therefore, to reduce the project's impacts on the Atlantic salmon resources in the Saco River Basin, the licensee should construct and install upstream fish passage facilities at all four dams associated with the Cataract Project and downstream fish passage facilities at the Cataract and West Channel dams, as recommended by the FWS. After consulting with the resource agencies, the licensee should file a plan and a schedule to construct, operate, and maintain upstream and downstream fish passage facilities at the Cataract Project

Flows sufficient to operate the fish passage facilities and to attract anadromous fishes to the passage facilities must be provided. The applicant proposes that a minimum flow of about 30 cfs be released from the West Channel dam and about 100 cfs (plus any remaining inflow) be released from the Cataract dam during anadromous fish migration, regardless of inflows. The MASRSC considers the fish migration period to be between April 1 and December 1, annually. The applicant also proposes to provide an additional 30 cfs to the West Channel when the NKL units are operating and for three hours after the project is shutdown during the upstream migration period, as recommended by the FWS. Most of the flow would be passed at the Cataract dam in order to concentrate anadromous fish at the entrance to the Cataract fish passage facilities. A consistent flow from the project during the migration period would improve fish passage efficiency. The staff recommends that flows sufficient for effective and efficient fish passage, as determined through consultation with the FWS and through the monitoring and evaluation program (discussed below), be provided to protect and enhance the anadromous fishery in the Saco River.

The applicant proposes to bear all responsibilities for construction, operation, monitoring, and evaluation of the effectiveness of the fish passage facilities. CMP (1988a) devised an outline for a monitoring plan to evaluate the effectiveness of the fish passage facilities and operations of these facilities. A planning team, including representatives from CMP, FWS, MASRSC, MDIFW, and MDMR, would establish the methods and goals of the monitoring program. A development team would address experimental details and prepare study protocols to meet these established goals. A principal scientist from the development team would report the monitoring progress to members of the planning team. Reports would be submitted to the Commission at 5 year intervals, for a minimum of 15 years after issuance of the license. These reports would detail the progress of fish restoration in the Saco River and the results of the monitoring and evaluation studies.

Monitoring of fish passage facilities would provide valuable information to the licensee, the resource agencies, and the Commission regarding the adequacy of the facilities to pass migrating fish upstream of the dams in the Cataract Project under a variety of flow regimes. Therefore, to determine the effectiveness of the upstream and downstream fish passage facilities to protect migrating salmon, the licensee should monitor the levels of fish injury and mortality occurring at the project. If monitoring indicates that the fish passage facilities do not pass Atlantic salmon efficiently or cause unreasonable delays, the licensee should implement additional measures to reduce these migratory delays and should file a plan and a schedule to implement these additional measures.

Clupeids

Some clupeids, including alewife, American shad, and blueback herring, currently reproduce in the lower reaches of the Saco River. None of these species pass upstream of the Cataract Project dams due to insufficient fish passage facilities. Little is known about the blueback herring population in the Saco River. American shad do not constitute a significant resource, only being taken as an incidental catch to the alewife fishery. However, an active gill net fishery does exist for alewife downstream of the Cataract Project in the Saco River. Alewives are sold commercially as lobster bait.

The FWS, MDMR, MDIFW, and MASRSC presently have management plans to restore American shad to their historical range, including the Saco River between Cataract and Hiram (FERC No. 2530) Projects. Utilization of this habitat would provide for a spawning escapement of an estimated 104,500 adult American shad and production of between 6.6 to 10.7 million juveniles. During the next 15 years, the MDMR plans to release American shad above

the lower 2 dams of the Cataract Project (Central Maine Power Company, 1988b).

Until the upstream fish passage facilities are completed, the clupeids will be trapped from the Saco River downstream from the Cataract Project and transported to upstream locations. After completion of the fish passage facilities at Cataract, trapping and trucking of clupeids will continue to distribute these fishes to those portions of the Saco River upstream from the Cataract Project which would otherwise be inaccessible due to inadequate fish passage facilities. The applicant proposes to bear all costs of transporting or passing fish above the dams associated with the Cataract Project.

The management plan for alewives is to restore them to the Saco River between Cataract and Bar Mills dam (FERC No. 2194). With installation of efficient fish passage facilities, an estimated 214,670 spawning adults could use the upstream habitat in the Saco River, with a return to the river of between 0.7 and 1.4 million alewives (U. S. Fish and Wildlife Service et al., 1987). During the next 15 years, the MDMR, at the expense of CMP, plans to release up to 15,000 adult alewives above the West Channel dam and up to 17,000 alewives in the Skelton impoundment. Restoration of the clupeids would be accomplished using residual stocks which currently exist below the Cataract Project in the Saco River.

The fish passage facilities proposed for Atlantic salmon at the Cataract dams would also be designed to provide for upstream and downstream passage of clupeids. After these fish passage facilities are operational, growth in the runs of clupeids is expected to occur through natural upstream expansion, especially in the region beyond Skelton dam when proposed fish passage facilities become operational at Skelton. Plans for upstream trucking of adults by MDMR at the lowermost dams would accelerate restoration of these species in the Saco River.

d. Cumulative Impacts on Anadromous Fish

The existing flows and fish passage facilities at the Cataract Project contribute to adverse cumulative impacts because they do not provide efficient upstream or downstream passage of anadromous fish, principally Atlantic salmon, American shad, and alewife.

Providing safe, efficient, upstream passage of anadromous fishes at the Cataract and West Channel and Springs and Bradbury dams would reduce the adverse cumulative impacts to the fishery resources of the Saco River. Efficient fish passage would also make available the spawning and nursery areas in rivers that flow into the Saco River.

Cataract's existing upstream fish passage facilities are inadequate, and downstream passage are needed for the lower two dams. The river flow at the project is predominantly controlled by hydropower operations at the Bonny Eagle and Skelton Projects. Presently, flows in the Saco River are cyclically reduced upstream of the Cataract Project by peaking at these two upstream projects. These reductions cause losses of attraction flows for anadromous fishes and insufficient flows for fish passage at the hydropower projects that presently have fish passage facilities (Only Cataract and Skelton Projects on the Saco River presently have upstream passage facilities, and these are inadequate for efficient fish passage; U. S. Fish and Wildlife Service et al., 1987). Bonny Eagle controls flows for all of the downstream hydropower developments, including (in descending order) West Buxton (FERC No. 2531), Bar Mills, Skelton, and the four dams at Cataract. West Buxton was recently relicensed with a license condition providing for run-of-the-river operation. Bar Mills operates as run-of-the-river, and its license expires in 2005. The two projects that influence the flow regime at Cataract, Bonny Eagle and Skelton have licenses that expire in 1993. Thus, any major changes in the flow regime at Cataract would be subject to changes addressed in the relicensing process for these two projects.

CMP has addressed the problem of inadequate fish passage facilities in the Saco River Basin by working with the FWS, MASRSC, MDIFW, and MDMR to develop a plan for evaluating and installing appropriate fish passage facilities at each of their hydropower developments between Cataract and Hiram (just upstream of the Bonny Eagle development). The agencies propose upstream fish passage facilities at Cataract 2 years' post-licensing, and at Skelton in the year 2005, Bar Mills in 2006, West Buxton in 2007, Bonny Eagle in 2008, and Hiram in 2010. CMP proposes to develop upstream fish passage facilities according to the schedule recommended by the agencies for the Cataract and Skelton Projects, but with a 2 year delay between development at projects upstream of Skelton. Construction of downstream passage facilities would occur concurrently with construction of upstream fish passage facilities at Cataract. Downstream fish passage at hydropower facilities between Skelton and Bonny Eagle would occur the following year (Central Maine Power Company, 1988b).

The agencies have agreed to continue stocking efforts of anadromous fishes in the Saco River Basin. These measures, combined with the installation of efficient fish passage facilities and the provision of minimum flows, as proposed by CMP, would substantially enhance the anadromous fishery of the basin, and begin to open the corridor of anadromous fish passage through Maine and to the New Hampshire portion of the Saco River.

Unavoidable Adverse Impacts: Until new fish passage facilities are operational, the project would reduce the

efficiency of Atlantic salmon passage and prevent clupeid passage. Installation of the fish passage facilities and provision of flows through these facilities would improve passage of anadromous fishes; however, some upstream migrating fish would experience delayed migration. Because fish passage facilities are never 100 percent effective, some small percentage of fishes may still be lost to entrainment within the project facilities, even with the recommended downstream fish passage facilities operating.

There may be a minor decrease in fish habitat during water level fluctuations of the Springs-Bradbury headpond caused by the Cataract Project following the generation schedule of the Skelton Project. The headpond fluctuation of approximately 2 feet may cause losses of small amounts of viable fish habitat in the headpond.

3. Terrestrial Resources

Affected Environment: The proposed project is located within the northern hardwoods forest region. Common dominant species within the region are sugar maple, beech, hemlock, white birch, and yellow birch (Kuechler, 1964).

The land in the immediate area of the project's facilities, dams and powerhouses, is urban-industrial supporting sparse vegetation. The project's impoundment extends 9.3 miles upstream and is bordered by forest, field, and wetlands (Central Maine Power Company, 1986).

Most of the impoundment is bordered by riparian forest dominated by red oak, silver maple, and red maple. Other common tree species include black ash, basswood, box elder, elm, hemlock, shagbark hickory, trembling aspen, white birch, gray birch, white pine, and willow. Agricultural fields border much of the forest in the area (Central Maine Power Company, 1986).

Three wetlands on the MDIFW Inventory occur in or adjacent to the project's impoundment. They are characterized as follows (Central Maine Power Company, 1986):

(1) open freshwater, 99 percent open water, dominated by alder, rushes, pickerel weed, wapato, and willows;

(2) shallow freshwater marsh, 50 percent open water, dominated by sedges, rushes, yellow water lily, pickerel weed, wapato, and willow; and

(3) deep freshwater marsh, 30 percent open water, dominated by duck weed, yellow water lily, pickerel weed, wapato, willow and cattail.

The forest and fields bordering the impoundment provide habitat for eastern gray squirrel, grey fox, red fox, white-tailed deer, fisher, longtailed weasel, short-tailed weasel, snowshoe hare, woodcock, ring-necked pheasant, and ruffed grouse (Central Maine Power Company, 1986).

The project's impoundment and associated wetlands provide habitat for beaver, mink, muskrat, river otter, black duck, Canada goose, great blue heron, green heron, mallard, wood duck, and shorebirds.

The FWS, by letter dated May 4, 1984 (Gordon E. Beckett, Supervisor, New England Field Office), says that except for occasional transients, no endangered or threatened species are known to exist in the project impact area.

Environmental Impacts and Recommendations: No construction that would affect terrestrial resources is proposed. There are no on going impacts from the project on terrestrial resources. Changes in project operation affecting headpond drawdown would not affect terrestrial resources.

Unavoidable Adverse Impacts: None.

4. Cultural resources

Affected environment: There are 11 sites in the Saco-Biddeford area listed in the National Register of Historic Places. The mill buildings on Factory Island, adjacent to the project powerhouses, are eligible for listing on the National Register. Further, there are probably archeological sites dating from 1630, when the area was first settled, mostly along the southern bank of the river (Central Maine Power Company, 1986; Maine State Historic Preservation Officer's letter dated August 2, 1984).

Environmental Impacts and Recommendations: The Maine State Historic Preservation Officer (SHPO) recommends that continued operation of this project would have no effect on any structure, site, building, district, or object listed on or eligible for listing on the National Register (letter dated February 25, 1986).

Every reasonable effort has been made to determine whether there are National Register or eligible properties in the project area, whether they would be affected by the project, and whether the effect would be adverse. Despite these efforts, there remains a remote possibility for affecting National Register and eligible properties. ---

First, there is still the possibility that there could be significant undiscovered properties in the project area. If there are, they could be exposed to an adverse impact potential should there be further development.

Second, the staff's effect determination is based on the project design and location, as reported in the application and in the applicant's subsequent filings. The staff presumes the project and project operations described in these documents is accurate. But, facility designs sometimes continue to evolve during the licensing process, and even after licensing. If the licensee changes the design or the location of any proposal after a license has been issued, regardless why, it invalidates the staff-effect determination for the project.

The Advisory Council on Historic Preservation's regulations, 36 CFR at 800.11 -- Properties discovered during implementation of an undertaking -- addresses both of these points, and provides guidance for the Commission to follow with respect to each of them. The Commission staff has found it necessary to adapt these rules for its licensing process in the following way:

"When [a licensee] finds after beginning to carry out the undertaking that the undertaking will affect a previously unidentified property that may be eligible for inclusion in the National Register, or affect a known historic property in an unanticipated manner," the licensee shall give the Commission the information it needs to comply with the Advisory Council's regulations.

If the licensee finds properties during any construction, it should not do anything that would harm the property. If it has not started work that could harm the property, it should not start it; if it has started, it should stop. The licensee should take the following actions: (a) consult with the SHPO; (b) based on consultations with the SHPO, prepare a plan describing the appropriate course of action and a schedule for carrying it out; (c) file the plan for Commission approval; (d) take the necessary steps to protect the discovered properties from further impact until notified by the Commission that all of these requirements have been satisfied.

If the licensee decides to construct facilities, either in a way or in a place different from the project description (a) in the application and in subsequent filings; (b) the Commission staff analyzed for environmental impact potential, and (c) the SHPO and other agencies commented on, the licensee should consult with the SHPO about the changes. The licensee's changed project design or location of project structures might "affect a previously unidentified property that may be eligible, or a known historic property in an unanticipated manner."

Under these circumstances the licensee should not carry out its decision to change the project until it has completed the following steps: (a) consulted with SHPO; (b) based on consultation with SHPO, prepared a plan describing the appropriate course of action and a schedule for carrying it out; (c) filed the plan for Commission approval; (d) done nothing else that could affect National Register or eligible properties until the Commission tells the licensee that it has satisfied these requirements.

Unavoidable Adverse Impacts: None.

5. Recreation and Other Land and Water Uses

Affected Environment:

The Saco River, between Conway, New Hampshire and Hiram, Maine, is a popular recreational river. Canoeing, fishing, and camping are the primary activities. Recreational activity in this 43-mile stretch is considered intensive, and often described as overused. This section of the river is regarded as Maine's highest priority smooth-water, canoe-touring river. Between Bartlett, New Hampshire, and Bonny Eagle Dam in Hollis, Maine, the river received 90,240 user days of canoeing use during the summer of 1981 (Southern Maine Regional Planning Commission, 1983).

The project area is located downstream from the heavily used section of the river, yet it also receives ample canoeing, boating, and fishing use. Access to the river is evenly spaced along the 9 miles of the project's head ponds, beginning just downstream of Skelton dam. Land between access points is privately owned and often posted with "no trespassing" signs.

Available public access sites on the project impoundment include a site at the applicant's Skelton dam, a commercial campground, an undeveloped access at the Route 5 highway bridge, an undeveloped canoe access at a bridge crossing Swan Pond Brook, Rotary Municipal Park (Biddeford), Diamond Riverside Municipal Park (Saco), and Jubilee Park, leased to the city of Saco by the applicant. Canoe access is available at all locations except Jubilee Park. Boat launch facilities are available at the Skelton Project, the commercial campground, Rotary Park, and Diamond Riverside Park. Other facilities available at the above parks include swimming beaches, picnic areas, playgrounds, and a ski slope. Primitive camping is allowed with permission from the applicant on land within the Skelton Project adjacent to the Cataract headpond. There is no boating access to the river between the Springs-Bradbury dams and the Cataract-West Channel

dams. Signs warning boaters of the Springs and Bradbury dams have been erected in the impoundment.

The shoreline areas bordering the Cataract dam tailrace area are open to public access for fishing. The applicant owns property on both shores and parking is available in the vicinity of each site. Other potential fishing access areas near the dam are owned by or leased to Island Associates for the construction of a residential, commercial, and recreational complex.

The tidewater portion of the Saco River begins at the tailrace of the Cataract dam and the West Channel dam. Boat launching facilities below the project include a private yacht club and three public facilities (two require a small fee).

Water-skiing takes place in the lower reaches of the impoundment, below Swan Pond Brook. Above the confluence with Swan Pond Brook, the Saco River is narrower, swifter, less suitable for power boats than for canoes. Conflicts between canoeists and power boaters do arise in the middle section of the impoundment.

Bank fishing is popular in both the impoundments and below the project in the estuary. Fishing pressure is expected to increase with the restoration of anadromous fish to the river.

According to the 1983 Maine Assessment and Policy Plan for Outdoor Recreation, the town of Saco has 17 public parks, in addition to Ferry Beach State Park which offers a swimming beach, picnic areas, and trails. Biddeford has 12 public parks (Central Maine Power Company, 1986).

The project facilities, except for Springs and Bradbury dams, are located on Factory Island, a highly developed industrial site within the urban centers of Saco and Biddeford. Lands along the river and reservoir in the project vicinity are used for agriculture, residential development, recreation, commercial, and industrial purposes, with the industrial areas located at the lower end of the project. The Saco River is used for recreation and hydroelectric power generation in the project area.

Environmental Issues and Recommendations.

a. Recreational access for boating: Recreational boating access along the project impoundment is currently adequate. However, possible population increases, increasing recreational use in the lower Saco River, and the possible loss of some privately owned recreational access sites may make additional access necessary in the future.

FWS, DOC, and DIFW state that trailered boat access is adequate at the upper and lower ends of the project impoundment and that the existing carry-in boat access available at the Homestead Campground is adequate for the middle portion of the impoundment. However, should this access become unavailable for public use at a reasonable fee at some future date, CMP should provide for similar carry-in boat access at an alternative location approximately midway up the impoundment (letter from Vernon B. Lang, Acting Supervisor, New England Area, U.S. Fish and Wildlife Service, Concord, New Hampshire, April 15, 1987; letter from Craig W. Ten Broeck, Maine Rivers Coordinator, Maine Department of Conservation, Augusta, Maine, March 17, 1989; letter from Norman E. Trask, Deputy Commissioner, Maine Department of Inland Fisheries and Wildlife, Augusta, Maine, April 13, 1987). Furthermore, FWS suggests that CMP monitor the conditions of existing launching facilities and assist with maintenance, assume ownership, or provide new sites should the need arise during the term of the new license. Saco Parks and Recreation Department (SPR) concurs with the need to monitor river access and recreational use (letter from Susan C. Spath, Saco Parks and Recreation Department, Saco, Maine, March 25, 1987). Saco River Corridor Commission (SRCC) states that it may, at this time, be unwise to develop additional boat access sites on the lower Saco River in the project area due to past reports of use conflicts, particularly between canoeists and power boat users (letter from Margaret M. Roy, Executive Director, Saco River Corridor Commission, Cornish, Maine, March 25, 1987).

CMP proposes to maintain the boat launch at the Skelton Project to ensure adequate boating access in the upper reaches of the Cataract impoundment. In response to agency recommendations for recreational monitoring, the applicant explains that a standard article is typically included in the project license which reserves to the Commission the authority to prescribe appropriate action by the licensee when additional recreational needs become apparent (Central Maine Power Company, 1987b).

The population in the area along the lower Saco River is increasing. The population of York County increased 9.6 percent between 1980 and 1985 (Parkin and Giffen, 1987). Recreational use of the upper Saco River is reaching levels described as overused. The number of canoeists and campers using the Saco River is increasing very rapidly (Southern Maine Regional Planning Commission, 1983). An important recreational access site in the project area is provided by a private commercial enterprise, and, therefore, the future existence of this site is not ensured. Based on these conditions, the existing recreational environment is unstable. Therefore, it is important that the recreational environment be reviewed periodically in order to detect and respond to new recreational needs and concerns.

The standard license article referred to by CMP, reserves to the Commission the authority to prescribe appropriate action by the licensee when additional recreational needs become apparent. However, this article is designed to respond to unforeseen changes in recreational needs and places the burden for recognizing recreational needs on resource agencies. The staff concurs with the FWS and the SPR that to ensure the necessary periodic review of recreational needs in the project area, the licensee should, after consultation with FWS, DOC, DIFW, SPR, and SRCC monitor recreational resources in the project area, and provide a plan for providing new or enhancing existing recreational facilities should the need arise. Furthermore, the licensee should provide a carry-in boat launch area at the mid-section of the impoundment, preferably adjacent to the Route 5 bridge, if the existing access at the campground becomes unavailable for public use.

b. Recreational access below project for fishing: Fishing access downstream of the Cataract and West Channel dams may be inadequate for current use, as well as for the possible increased future use resulting from the restoration of anadromous fish to the river.

DIFW and FWS recommend the maintenance of bank fishing opportunities below Cataract dam. Much of the available land is not under CMP's control as it is owned or leased by Island Associates. DIFW suggests that CMP work with Island Associates and the city of Saco to maintain a "common area" at the tip of Factory Island (letter from Norman E. Trask, Deputy Commissioner, Maine Department Inland Fisheries and Wildlife, Augusta, Maine, April 13, 1987). FWS suggests that CMP examine the adequacy of existing and potential shore fishing access and parking in the area below Cataract dam, and provide any needed improvements during the term of the license (letter from Vernon B. Lang, Acting Supervisor, New England Area, United States Fish and Wildlife Service, Concord, New Hampshire, April 15, 1987).

CMP states that existing downstream fishing access is adequate for current use, and would accommodate the anticipated increases in fishing use due to the restoration of anadromous fish (Central Maine Power Company, 1986).

There is bank fishing access below the Cataract dam on both sides of the channel. Two parking areas are available and informal trails lead from the parking areas to the bank fishing areas below the dam. The existing bank fishing access is not used to capacity, and can withstand some increase in use. Furthermore, additional recreational facilities, to be located at the end of Factory Island, are planned by Island Associates to include a waterfront walkway, two waterfront parks, and private and public marinas (Central Maine Power Company, 1987b). Although the "common area" recommended by the DIFW might enhance

recreational opportunities near the project, current access is adequate and no further access is required at this time. However, as noted above, fishing use is expected to increase when anadromous fish are restored to the area. The level of future use is unknown, and therefore, the future adequacy of bank-fishing access is uncertain. For this reason, the staff concurs with the FWS in recommending that CMP monitor the adequacy of shore fishing access in the east Channel below the dam and public parking, and provide any improvements within those portions of the project below Cataract dam as the need arises. Therefore, the licensee, should maintain the existing bank fishing access areas, including parking areas and trails in the area of Cataract dam. In addition, the licensee, after consultation with FWS, DOC, DIFW, SPR, and SRCC, should monitor recreational resources in the project area, and provide a plan for providing new or enhancing existing recreational facilities should the need arise.

c. Impacts to Rotary Municipal Park: Fluctuations in river water level and flow velocity at the project impoundment can affect use of the beach area and boat launch at Rotary Municipal Park. The proposed project may aggravate the existing condition, which would adversely affect useability and safety at the beach.

The DOC states that at certain times, velocity of flow has been a problem for swimmers at the Rotary Park beach; however, it is uncertain that the present operation of the dam contributes to or causes the problem. The DOC is concerned that the present tolerable conditions at the beach could be worsened by changes in project operation. DOC recommends that, if variations in water level or velocity are increased by the proposed project, effects should be mitigated by modifying the Rotary Park beach area, or by providing an outdoor swimming pool if beach modification is not feasible (letter from Richard B. Anderson, Commissioner, Maine Department of Conservation, Augusta, Maine, January 12, 1987). However, no alteration of existing water level fluctuation patterns that would affect Rotary Park Beach would occur (see water resources section). Therefore, no mitigative measures are necessary.

Unavoidable adverse impacts: None.

C. Alternatives to the Proposed Project

Since no entity recommended Federal takeover, that alternative was not considered. Under the no action alternative, continuing to issue annual licenses, the project would continue to operate as it has and existing environmental impacts would continue. However, as noted above, in section IIIC, this is not a reasonable alternative. The remaining alternatives to the proposed action are denial of a new license or the issuance of a non-power license.

Either alternative would require the applicant to cease operation of the hydroelectric facility and to obtain replacement power from an alternative source to meet the electric power requirements of the applicant's customers. Replacement power from any available alternative source would impose an additional financial burden on the applicant's customers.

The applicant estimates that, between 1988 and 2027, the cost of replacing project power would amount to \$664,798,000; and that, over the same period, the total costs of power from the entire redeveloped Cataract Project would amount to only \$69,278,000. By subtraction, the applicant estimates denial of a new license would cost CMP customers \$595,520,000 over the period 1988 to 2027.

D. Comprehensive Development

Sections 4(e) of the Federal Power Act (Act) states that in deciding whether to issue a license, the Commission, in addition to power and development purposes of the project, shall give equal consideration to the purposes of energy conservation, of the protection, mitigation of, damage to, and enhancement of, fish and wildlife, of the protection of recreational opportunities, and of the preservation of other aspects of the environmental quality. Further, the Act in section 10(a) states that the project adopted shall be such that in the judgement of the Commission will be best adapted to a comprehensive plan for improving or developing a waterway for the use or benefit of interstate or foreign commerce, for the improvement and utilization of water power development, for the adequate protection, utilization, and enhancement of fish and wildlife (including related spawning grounds and habitat), and for other beneficial public uses, including irrigation, flood control, water supply, and recreational and other purposes discussed in section 4(e).

This assessment evaluates the effect of project operation on the environmental resources of the project area and provides a discussion of mitigative measures that should be implemented to protect and enhance the these environmental resources. Mitigative measures include minimum flow releases below the Cataract Project dams, measures for upstream and downstream fish passage, measures to protect cultural resources prior to any future land disturbing activities in the project area, and construction of recreational facilities to meet the public demand. These measures represent the most comprehensive use of the resources.

Based upon a review of the agency and public comments filed in this proceeding, and on the staff's independent analysis, the

Cataract Hydroelectric Project is best adapted to a comprehensive plan for the Saco River.

E. Recommended Alternative

Issuing a new license for the existing project is the preferred alternative because electricity generated from a renewable resource would be used, thus lessening the use of existing fossil-fueled steam-electric plants, and because the proposed mitigative measures would decrease the environmental effects of continued project operation.

VI. FINDING OF NO SIGNIFICANT IMPACT

Until construction and installation of the upstream and downstream fish passage facilities are completed, the Cataract Project would reduce the efficiency of anadromous fish passage and use of the spawning and rearing habitat in the Saco River. Installation of the fish passage facilities would improve fish passage efficiency; however, some upstream migrating fish would experience delayed migration. With the recommended downstream fish passage facilities operating, some adult and juvenile fish would still be lost due to entrainment and impingement within the project facilities.

On the basis of this independent environmental analysis, issuance of a license for the project would not constitute a major federal action significantly affecting the quality of the human environment.

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SAFETY AND DESIGN ASSESSMENT
CATARACT HYDROELECTRIC PROJECT
FERC NO. 2528-002 - MAINE
(NEW LICENSE)

DAM SAFETY

The Cataract Hydroelectric Project is located on the Saco River in the cities of Biddeford and Saco and in the towns of Dayton and Buxton, Maine.

The initial license was issued in 1968, with a termination date of December 31, 1987. The Central Maine Power Company (CMP) filed an application for a new license for the continued operation of the project on December 27, 1984, and an amended application for a new license on August 25, 1986.

The project includes four dams, the Cataract and West Channel Dams which create a 14-acre reservoir with a storage capacity of 1.2 million cubic feet, and the Bradbury and Springs Dams which create a 359-acre reservoir with a storage capacity of 31 million cubic feet. The dams are owned by the applicant. The dams were inspected by the Commission's New York Regional Office (NYRO) on April 24, 1986. The Regional Director reported that the low hazard dams and project structures are in sound condition. According to the third and fourth Part 12 five-year inspection reports, dated October 1986 and May 1986, all structures, with the exception of the West Channel Spillway Section E-E, and Springs Dam Section F-F, are stable under all loading conditions, including the loading from the probable maximum flood (PMF) of 123,000 cubic feet per second (cfs), as analyzed under guidelines and assumptions accepted by the Commission.

The West Channel Spillway Section E-E is theoretically unstable for all discharges greater than 29,000 cfs. It is known, however, that the existing structure has withstood greater flood conditions many times during its life, and the flood of record (est. 60,000 cfs) was passed without incident. It is expected that failure of this portion of the structure would affect a relatively small opening in the dam and that the incremental downstream impact due to an increase in discharge during a flood would be minimal.

The Springs Dam Section F-F is theoretically unstable at less than half PMF. It is a relatively low structure (about 12 feet high) and the downstream effects due to its possible failure during a major flood would be negligible.

The staff concludes that the dams and appurtenant structures will be safe and adequate for continued operation if the facilities are operated and maintained in conformance with sound safety rules and good engineering practice.

PROJECT DESIGN

The existing Cataract Project as currently licensed consists of:

(A) the CATARACT DAM and POWERHOUSE located on the East Channel of the Saco River in the City of Saco. The project works include: (1) a nonoverflow concrete section about 116 feet long and 52 feet high; (2) a concrete powerhouse intake section about 49.25 feet wide with two openings; (3) a vertical lift Broome type gate section about 20 feet wide and 15 feet high; (4) an overflow spillway section about 90 feet long and 30 feet high with four-foot-high hinged-type flashboards and crest elevation at 40 feet m.s.l.; (5) a steel/brick powerhouse 53 feet long, 37 feet wide and 40 feet high, housing one 6,650-kilowatt (kW) turbine-generator unit; and (6) appurtenant facilities;

(B) the WEST CHANNEL DAM located on the West Channel of the Saco River in the cities of Saco and Biddeford. The project works include; (1) a stone masonry dam section about 237.5 feet long and 7 feet high with 4-foot-high pin-type flashboards; (2) an orifice fishway section about 16.5 feet wide; (3) a taintor gate section about 20 feet wide and 15 feet high; (4) a spillway section about 36 feet long and 17 feet high with 4-foot-high pin-type flashboards; and (5) a sluice gate section about 15 feet wide;

(C) a 13.7-acre RESERVOIR with a normal surface elevation at 44 feet m.s.l. and storage capacity of 1.2 million cubic feet created by the Cataract and West Channel dams;

(D) the BRADBURY DAM located on the Saco River in the city of Biddeford. The project works include: (1) two concrete dam sections, one 141 feet long, the other 38 feet long, both about 12 feet high with 20-inch pin-type flashboards, with crest elevation at 47.7 feet m.s.l.; and (2) a gate section with a 20.25-foot-wide and 13.5-foot-high taintor gate;

(E) the SPRINGS DAM located on the Saco River in the cities of Biddeford and Saco. The project works include: (1) a concrete gravity dam section about 177 feet long and 10 feet high with 18-inch flashboards and crest at 47.7 feet n.s.l. (2) a gate section about 50 feet long with four openings, one closed with timber stop logs, and the remaining three openings mounting 16-foot-wide and 11-foot-high taintor gates; and (3) a gate section about 20 feet long with three submerged gates, each covering an opening 8 feet wide and 6 feet high;

(F) a 359-acre RESERVOIR with a normal surface elevation at 49.2 feet m.s.l. and storage capacity of 31 million cubic feet created by Bradbury and Springs dams.

The existing WEST CHANNEL UNITS, purchased from the NKL Tanning Inc. in 1983, are located on the Factory Island. The facility incorporates: (1) a powerhouse with two turbine-generators rated at 480 kW and 420 kW, providing a total installed capacity of 900 kW, located in vacant mill building No. 1. The building is owned by GAR Properties. The licensee has a twenty year lease on the building with provisions to extend the lease to a total term equal to the term of FERC license; (2) a headgate structure; (3) a covered flume about 600 feet long; (4) two penstocks, 8 feet and 12 feet in diameter which connect the flume with the existing units located in mill building No. 1; and (5) appurtenant facilities.

WATER RESOURCE PLANNING

In 1983, the applicant purchased water rights and two additional generating units located near the existing project on the West Channel of the Saco River. The applicant has decided to rehabilitate the two units and incorporate them within the licensed project. The rehabilitation would consist of overhauling both turbines and generators, the installation of fencing along the easterly side of the underground intake flume, and the repair of the deck over the intake flume. The cost estimate for the rehabilitation is \$480,000. The generating capacity of the project would be increased from 6,650 kW to 7,550 kW, and the estimated annual generation from 46,000,000 kilowatthours (kWh) to 50,500,000 kWh. No other additional increase of capacity is planned. The maximum hydraulic capacity is about 3,100 cfs, which is equalley or exceeded about 36 percent of the time by the river.

The applicant is planning to install anadromous fish passage facilities at its dams on the Saco River within the restoration/management program. The program will include upstream and downstream passages scheduled for construction between years 1990 and 2008. Operation of the proposed fish passage facilities is estimated to decrease generation by 990,000 kWh per year.

There are no current contracts or constraints which would affect the manner in which the project is operated other than the future minimum flow requirement of 851 cfs during the migrating season, which impacts energy production as indicated before.

No specific state or federal agency comments or recommendations were made addressing flood control, navigation, water supply, or irrigation requirements in the basin.

The Presumpscot - Saco - Piscataqua River Basin Planning Status Report includes no projects, either proposed or constructed on the Saco River that this project would impact. The project would not conflict with any pending applications for exemption, license, or preliminary permit.

Based on the above, staff concludes that the Cataract Project adequately utilizes the available flow and head at the site and would not conflict with any existing or planned water resource developments in the basin.

ECONOMIC EVALUATION

There will be no capital expenditures associated with either the original Cataract (East Channel) units, or the more recently acquired NKL (West Channel) units. The overhaul of the NKL units has been completed. The cost of the overhaul (\$480,000) was treated as an annual expense, to be recovered through rates charged to CMP's customers, as authorized by the Maine Public Utilities Commission. Current annual expenses associated with the NKL units are lease payments of \$21,000, and annual operating, maintenance and overhead expenses of \$65,000, estimated for the year 1989. These expenses, when divided by the additional energy production of 4,500,000 kWh, give a unit cost of generation of about 19 mills/kWh for the NKL units.

When the project's economics is analyzed as a whole, including both East Channel and West Channel units, the licensee calculated the overall cost of production as \$335,541 in 1987 for generation of 42,426,908 kWh, or a per-unit cost of 7.9 mills/kWh. This compares with a contract cost of 54.2 mills/kWh for alternative power imported from Canada. Thus the Cataract Project saved CMP 46.3 mills/kWh or about \$1,964,000 in 1987.

Under present conditions, and at the foreseeable level of operation and maintenance expenses, the relicensed project will continue to be an efficient, low cost producer of electric energy for the licensee.

EXHIBITS

The following portion of Exhibit A and the following F drawings should be included in the new license:

Exhibit A Pages A-1 through A-14 describing the mechanical, electrical and transmission equipment, filed August 25, 1986.

<u>Exhibit F Drawings</u>	<u>FERC No. 2528 -</u>	<u>Description</u>
1	1	Cataract Powerhouse and East Channel Dam Plan, Elevation & Sections
2	2	Cataract Powerhouse Plan & Sections
3	3	West Channel Dam Plan & Sections
4	4	Bradbury & Springs Dams Plan & Sections
5	5	NKL Powerhouse Plans
6	6	NKL Powerhouse Sections