Appendix B

Federal Energy Regulatory Commission license agreements for the licensed dams in the Cheboygan River watershed. Also included are operating agreements and documents regarding the Cheboygan Dam. (Documents were reduced to fit these pages.)[1]

[1]Figures missing on pages 360–362 of this document were missing and unavailable from the source document, pages 36–38 of FERC's Environmental Assessment for Hydropower License, Tower and Kleber Hydroelectric Project, FERC Project 10615-001, Michigan, 1993.

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THE PROCTER & GAMBLE PAPER PRODUCTS COMPANY

SOUTH MAIN STREET
CHEBOYGAN, MICHIGAN 49721
616-627-5664

May 18, 1982

Michigan Department of Natural Resources,
Waterways Division
P. O. Box 30028
Lansing, Michigan 48909

Attention: Keith E. Wilson
Chief, Waterways Division

Gentlemen:

Re: Cheboygan Hydropower and River Flow Regulation Agreement

The Procter & Gamble Paper Products Company (Procter & Gamble) has initiated a Cheboygan Dam Powerhouse Redevelopment Project, pursuant to which the Company intends to rehabilitate and operate the hydroelectric power generating facilities located on the Cheboygan River, City of Cheboygan, Cheboygan County, Michigan, at the existing powerhouse adjacent to our Cheboygan plant. The proposed project generally consists of refurbishing the powerhouse with two turbine-generator units with a combined rated capacity of 1,400 kw. The project will be run-of-the-river, utilizing the water power potential of the existing dam. There will be no increase in the normal surface elevation of the impoundment, nor will the project entail any change from the prevailing regime of the storage and release of water from the impoundment, for which the Waterways Division, Michigan Department of Natural Resources (Waterways Division) has had, and will continue to have, the responsibility of regulating.

Because Procter & Gamble's project to rehabilitate and operate the powerhouse and the Waterways Division's continuing responsibility to regulate river flow are both interrelated, the parties wish to establish and confirm by this agreement a mutually acceptable and beneficial manner of pursuing their respective interests and discharging their respective responsibilities.

The premises underlying this agreement are as follows:

A. The Cheboygan dam consists of the following structures and facilities:

-- A powerhouse with four turbine bays and associated equipment.

-- A navigation lock.

-- A natural earth embankment forming part of the dam.

-- A six bay spillway.

-- A fishladder located at the spillway.

-- Associated riverside property on the east and west side of the dam.

-- A process water pump house intake.

B. Procter & Gamble owns the powerhouse and associated equipment (from which generators and related items were removed in 1965 when the turbines were last used to generate power), the pump house, and certain riverside property on the west side of the dam.

C. The Waterways Division owns all other impounding structures and facilities at the dam, including the navigation lock, the earth embankment, the gated spillway, the fishladder and certain riverside property east of the dam.

D. The Waterways Division has operated and will continue to operate the dam to regulate the flow of the Cheboygan River. Flow regulation is accomplished primarily by operating the turbine ring gates at the powerhouse, and secondarily by operating the gates at the spillway.

E. To enable the Waterways Division to 1) regulate the river flow at the dam, and 2) lock recreational watercraft through the dam, Procter & Gamble granted to the Waterways Division in 1967 an easement for roadway purposes as a means of ingress and egress to and from the powerhouse and lock facilities, and an easement to enter upon its property for the purpose of operating and maintaining "water elevation control devices" and other specified structures and equipment (hereinafter collectively referred to as "flow control equipment").

F. The Waterways Division has established a flow regime of storage and release of water from the impoundment, with the following objectives and procedures, hereinafter referred to as the "established flow regime":

Objective 1. Enable migratory fish passage at the dam pursuant to the policy of the Michigan Department of Natural Resources, Inland Fisheries (Lakes and Streams) Division.

The fishladder head gate is left fully open at all times, and water spills continuously down the ladder. Pursuant to the current policy of the Inland Fisheries Division, the fishladder is currently in a deactivated mode to block passage of sea lamprey from the Great Lakes to the Inland lakes and streams. The fishladder may be reactivated in the future by the Inland Fisheries Division should the sea lamprey situation change. In that event, the reactivation and operation of the powerhouse would not affect operation of the fishladder.

Objective 2. Provide flowing water to the fishery at the catch basin located below the spillway bays, and to enhance seasonal attraction of the fishery.

One bay at the spillway is opened seasonally to increase flow through the spillway catch basin and draw spawning fish from the Great Lakes into the catch basin

Objective 3. Reduce the river current that strikes recreational water craft at right angles as they pass below the powerhouse.

One bay at the spillway is opened as necessary to develop a current along the east bank below the powerhouse, thereby facilitating the passage of recreational water craft.

Objective 4. Lock recreational water craft through the dam.

The services of a lockmaster are provided by the Waterways Division to boaters.

Objective 5. Regulate water levels of the Inland Route (Cheboygan River and upstream impoundments).

The powerhouse and spillway gates are manipulated to regulate Mullett Lake levels according to the following schedule:

a) 1 January to 31 March - draw down gradually to 592.65 feet (USC&GS)

b) 1 April to 14 April - bring up to 593.6 feet (USC&GS)

c) 15 April to 14 October - hold at 593.6 feet (USC&GS)

d) 15 October to 14 November - draw down to 593.1 feet (USC&GS)

e) 15 November to 31 December - hold at 593.1 feet(USC&GS)

This schedule allows Mullett Lake draw-down to minimize shoreline ice damage. Operation of the powerhouse turbine ring gates is the primary means of flow regulation, with the operation of the spillway gates being a secondary or supplemental means of regulation when flow capacity of the powerhouse is exceeded.

Based upon the foregoing, Procter & Gamble and the Waterways Division hereby agree as follows:

1. The Waterways Division shall use its best efforts to follow substantially the "established flow regime".

2. Upon installation of the refurbished hydroelectric generating units and related equipment, the Waterways Division shall be entitled to use and operate such related equipment as is necessary or convenient in discharging its responsibilities to regulate the river flowage.

3. The Waterways Division shall, consistent with adherence to the "established flow regime", direct the river flow through a specific turbine bay or bays in the powerhouse as requested by Procter & Gamble for the purpose of maximizing the water power potential for the generation of electrical power.

4. Procter & Gamble shall have the right and privilege, but not any obligation, to inspect, maintain, repair, replace, reconstruct, and install the "flow control equipment" which may be necessary or convenient for its use of the hydroelectric plant. This right shall be concurrent with the similar right of the Waterways Division, but Procter & Gamble's right shall expire when it, and its successors and assigns abandon the use of the plant to generate electricity.

If you are in agreement with the above terms and conditions, please arrange to have an authorized representative of the Waterways Division execute two copies of this agreement and return one to my attention.

Very truly yours,

THE PROCTER & GAMBLE PAPER
PRODUCTS COMPANY

Homer A. Bullard
Plant Manager
Cheboygan Plant

ACCEPTED:

Michigan Department of Natural
Resources, Waterways Division

By _____

Title Chief, Waterways Div.

Date June 7, 1982

HAB/ac

UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

The Proctor and Gamble Paper Products Company) Project No. 7142-000

NOTICE OF EXEMPTION FROM LICENSING

(Issued April 4, 1983)

A notice of exemption from licensing of a small hydroelectric project known as Cheboygan Dam, Project No. 7142, was filed on March 14, 1983, by The Proctor and Gamble Paper Products Company. The proposed hydroelectric project would have an installed capacity of 1500 kW and would be located on the Cheboygan River in Cheboygan County, Michigan.

Pursuant to Sections 4.109(c) and 375.308(ss) of the Commission's regulations, and subject to the terms and conditions set forth in Section 4.111 of the Commission's regulations, the Director, Office of Electric Power Regulation, issues this notification that the above project is exempted from licensing as of April 14, 1983.

Lawrence R. Anderson

Lawrence R. Anderson
Director, Office of Electric
Power Regulation

DC-A-13

UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

Cheboygan Dam Powerhouse)
Redevelopment Project)

NOTICE OF EXEMPTION OF
SMALL HYDROELECTRIC POWER PROJECT
FROM LICENSING

(1) THE PROCTER & GAMBLE PAPER PRODUCTS COMPANY notifies the Federal Energy Regulatory Commission that the CHEBOYGAN DAM POWERHOUSE REDEVELOPMENT PROJECT, a small hydroelectric power project as defined in 18 C.F.R. Section 4.102 is exempt from licensing under the terms of 18 C.F.R. Section 4.109 through Section 4.111. The project is not currently licensed.

(2) The location of the project is:

(State or territory) Michigan

(County) Cheboygan

(Township or nearby town) Cheboygan

(River or stream) Cheboygan River

(River basin) Cheboygan River

(3) The exact name, business address, and telephone number of the filing party is:

Business Office at Project Site

The Procter & Gamble Paper Products Company
307-549 South Main Street
Cheboygan, Michigan 49721
616-627-5664

Principal Business Office

The Procter & Gamble Paper Products Company
301 East 6th Street
Cincinnati, Ohio 45202
513-562-1100

(4) The project is located entirely on non-Federal lands, and includes the following features:

(i) Dams: The project powerhouse is located at the Cheboygan Dam that was first constructed in 1845. A navigation lock and spillway was built in 1869, and an electric light plant was added in 1887. The existing powerhouse was constructed in 1922 with four bays and four

vertical Francis type 400 kw turbine-generators. In 1945, two bays were reconstructed for installation of one vertical manually adjustable blade runner, modified Kaplan type turbine-generator with a capacity of 1000 kw.

The length across the powerhouse, lock, and spillway face at the dam total 252 feet. A natural earth embankment with sheet pile face adds another 375 feet to the width of the dam.

The height above streambed, as defined in 18 C.F.R. 12.30, is 19.5 feet.

The gross storage capacity of the related impoundment is 191 acre feet.

(ii) Powerplants: One powerplant exists at the Cheboygan Dam; it has existed since 1922. No changes to the civil works at the powerhouse are planned. The average hydraulic gross head is 14.1 feet. The hydraulic head varies due to uncontrolled water level variations at the tailrace caused by the level of Lake Huron located only 1.6 miles downstream, and due to controlled head pond variations caused by the established flow regime and water flow management practices at the dam under the continuing operating control of the Waterways Division of the Michigan Department of Natural Resources. Prior to temporary retirement of the powerhouse in 1965, the installed electric power generating capacity at the powerhouse was 1800 kw. This capacity was removed leaving behind only the gates and actuators, and the partly dismantled runners. It is proposed to refurbish the largest of the three existing gate/draft tube sites with a vertical Kaplan type turbine-generator with a total installed capcity of 1500 kilowatts, and an estimated average annual generation of 9,370,000 kilowatt-hours.

(iii) Average stream flow: The average annual stream flow is 1,037 cubic feet per second as determined from 35-year stream flow records of the U.S. Department of the Interior.

(5) It is certified that the small hydroelectric power project conforms to the specifications set forth in section 4.109(a) of the Commission's regulations and that The Procter & Gamble Paper Products Company has complied with section 4.112(b) of the Commission's regulations, including the following:

(i) The Michigan Department of Natural Resources, Water Quality Division, has certified that the construction, operation, and maintenance of the project will not cause a violation of any applicable water quality standards.

(ii) The U.S. Fish and Wildlife Service, East Lansing Field Office, and the Michigan Department of Natural Resources, Fisheries Division, have certified that there is not a significant existing population of migratory fish at the project dam.

(iii) The Michigan State Historic Preservation Office has certified that the proposed small hydroelectric power project does not entail any construction that would adversely affect any site included in or eligible for inclusion in the National Register of Historic Places.

(iv) The U.S. Fish and Wildlife Service, East Lansing Field Office, has certified that the proposed small hydroelectric power project does not entail construction or operations that would adversely affect any threatened or endangered species or critical habitat listed or designated in the regulations of the U.S. Fish and Wildlife Service of the Department of the Interior or the National Marine Fisheries Service of the Department of Commerce.

(v) The U.S. Fish and Wildlife Service, East Lansing Field Office, and the Michigan Department of Natural Resources, Fisheries Division, have not prescribed migratory fish restoration measures as a condition of the exemption.

(6) Executed this 9 day of March, 1983, by an authorized representative of The Procter & Gamble Paper Products Company.

Ashley L. Ford
Secretary, The Procter & Gamble
Paper Products Company

VERIFICATION

The facts alleged in the foregoing Notice of Exemption are true and accurate to the best of my knowledge, information and belief.

Ashley L. Ford
Secretary, The Procter & Gamble
Paper Products Company

Sworn to and subscribed in my presence this 9th day of March, 1983.

CAROL JACKSON
Notary Public, State of Ohio
My Commission Expires June 2, 1985

9411B

CERTIFICATE OF SERVICE

I hereby certify that I have this day served the attached Notice of Exemption of Small Hydroelectric Power Project from Licensing upon the following agencies, by depositing a copy thereof in the U.S. mails, properly addressed with postage prepaid:

United States Department of the Interior
Fish and Wildlife Service, East Lansing Field Office
Room 301, Manly Miles Building
1405 S. Harrison Road
East Lansing, Michigan 48823

Michigan Department of Natural Resources
Water Quality Division
Stevens T. Mason Building
Box 30028
Lansing, Michigan 48909

Michigan Department of Natural Resources
Fisheries Division
Stevens T. Mason Building
Box 30028
Lansing, Michigan 48909

Michigan Department of State
Michigan History Division
208 N. Capitol Avenue
Lansing, Michigan 48918

Dated at Cincinnati, Ohio this 10th day of March, 1983.

David E. Ross
Senior Counsel, The Procter & Gamble Paper Products Company

9411B

UNITED STATES OF AMERICA 67 FERC ¶ 62,126
FEDERAL ENERGY REGULATORY COMMISSION

Wolverine Power Supply Cooperative, Inc. — Project No. 10615-001 — Michigan

ORDER ISSUING LICENSE
(Major Constructed Project)
(Issued May 12, 1994)

The Wolverine Power Supply Cooperative, Inc. (Wolverine), filed a license application under Part I of the Federal Power Act (FPA) to continue to operate and maintain the existing but unlicensed 1,760-kilowatt (kW) Tower and Kleber Hydro Project located on the Black River, a navigable waterway of the United States, in Cheboygan County, Michigan.

BACKGROUND

Wolverine is not proposing to add any new capacity, or make any major modifications to the project. The project was found jurisdictional under Docket No. UL 86-1.1/

Notice of the application has been published. No agency or other entity objected to or opposed the issuance of this license. The comments received from interested agencies and individuals have been fully considered in determining whether to issue this license. Michigan Department of Natural Resources (Michigan DNR) and the Michigan Water Resources Commission jointly filed a motion to intervene in order to be a party to the proceedings. The Anglers of the AuSable, Inc., the Great Lakes Council, Inc. of the Federation of Fly Fishers, Inc., the Michigan United Conservation Clubs, and the Michigan Council of Trout Unlimited filed a collective motion to intervene in order to protect their interests with respect to the nondevelopmental values of the Black River.

The Commission's staff issued an Environmental Assessment (EA) for this project on April 7, 1993, which is attached to and made part of this license. The staff also prepared a Safety and Design Assessment (SDA) which is available in the Commission's public file for this project.

PROJECT DESCRIPTION

The Tower and Kleber Hydro Project consists of two

1/ The Black River was found navigable based on a navigation status report prepared by the Commission's Chicago Regional Office in May of 1939.

developments: (A) the Tower Hydroelectric Development which includes a 29.3-foot-high concrete gravity dam, a 102-acre reservoir, a spillway section, a powerhouse containing two 280-kW generating units, a 2.4-kV transmission line, and appurtenant equipment and facilities; and (B) the Kleber Hydroelectric Development which includes a 40-foot-high earth dam, a 295-acre reservoir, a spillway controlled by a Taintor gate, an intake structure equipped with two vertical lift gates, a reinforced concrete powerhouse containing two 600-kW generating units, a 12.5-kV transmission line, and appurtenant equipment and facilities. A more detailed description is contained in paragraph (B)(2) of this license.

WATER QUALITY CERTIFICATION

The Michigan DNR, by letter dated July 21, 1988, granted Section 401 water quality certification for the Tower and Kleber Project, pursuant to the Clean Water Act. The water quality certificate for the project contains the following conditions:

1(a) The project shall be operated in a run-of-river mode, except for events completely beyond the control of the Licensee.

(b) In the event of a violation in run-of-river operation, the Licensee shall make every effort to ensure a release from the impoundment, immediately contact the Michigan DNR FERC Coordinator, and notify the Michigan DNR - Fisheries Division within 24 hours.

2) Should the Licensee become aware of a water quality emergency in the project impoundment or downstream, the Licensee shall immediately contact the Michigan DNR through the Pollution Emergency Alerting System, and shall modify project operation or discharge as needed to alleviate the emergency.

3) To assure run-of-river operation, the Licensee shall monitor and record inflow to the project impoundment and outflow from the project, and provide this information to the Michigan DNR and/or the FWS upon request.

These conditions require measures that would help to maintain water quality in the Black River, but do not

specifically require maintenance with State standards. Articles 401, 402, and 404 encompass these conditions, and require the Licensee to: develop and implement a water quality monitoring plan, including implementing reasonable measures to alleviate water quality problems, operate the Tower and Kleber Project in a run-of-river mode, and develop and implement a plan to monitor run-of-river operation.

SECTION 18 FISHWAY PRESCRIPTION

The U.S. Department of the Interior (Interior), by letter dated December 7, 1992, requests that its authority to prescribe the construction, operation, and maintenance of fishways pursuant to Section 18 of the FPA be reserved for any project licensed at Tower dam and Kleber dam. Although fish passage facilities may not be prescribed by Interior at the time of project licensing, the Commission's practice has been to include a license article which reserves Interior's authority to prescribe facilities for fish passage. Therefore, Article 408 of this license reserves authority to the Commission to require the Licensee to construct, operate, and maintain such fishways as may be prescribed by Interior pursuant to Section 18 of the FPA.

RECOMMENDATIONS OF FEDERAL AND STATE FISH AND WILDLIFE AGENCIES

Section 10(j) of the FPA requires the Commission to include license conditions, based on recommendations of Federal and state fish and wildlife agencies, for the protection of, mitigation of adverse impacts to, and enhancement of fish and wildlife. Section 10(j) of the FPA also states that whenever the Commission believes any fish and wildlife agency recommendations are inconsistent with the purposes and requirements of the FPA or other applicable law, the Commission and the agencies shall attempt to resolve any such inconsistency, giving due weight to the recommendations, expertise, and statutory responsibilities of such agencies.

Staff made a preliminary determination that certain Michigan DNR and Interior recommendations were inconsistent with the purpose and requirements of Part I of the FPA and other applicable law, and conflicted with the comprehensive planning and public interest standards of Section 10(a) of the FPA.

In response to the determinations, staff received comment letters from Interior, the Michigan DNR, and Wolverine Power Supply Cooperative (Wolverine). The following discussion is to address comments in letters from the Michigan DNR (letter dated June 1, 1993, from James G. Truchan, Michigan DNR - FERC Program Manager, Lansing, MI), the U.S. Fish and Wildlife Service (letter dated June 22, 1993, from Charles M. Wooley, USFWS -- Field Supervisor, East Lansing, MI), and Wolverine (letter dated May 6, 1993, from James R. Nickel, Wolverine Power Supply Cooperative -- Power Production Manager, Cadillac, MI) to the Commission regarding the EA for the Tower and Kleber Hydro Project issued April 7, 1993.

The Michigan DNR and the U.S. Fish and Wildlife Service (FWS) requested, and subsequently attended, a consultation meeting on June 28, 1993, at the Commission's Washington, D.C. office to resolve issues arising under □ 10(j) of the FPA

[10(j) meeting]. Other participants represented Wolverine and Commission staff. All fish and wildlife concerns and other concerns presented in the letters were addressed at the 10(j) meeting, as summarized below. Unless otherwise cited, the statements attributed to the Michigan DNR and the FWS are from these letters.

FISHERIES

Fish Entrainment and Protection

As noted on the bottom of page 17 of the EA for the Tower and Kleber Project, Wolverine and the Michigan DNR have reached agreement on a four-stage fish protection plan that is designed to minimize fish entrainment at the project. The agreement between Wolverine and the Michigan DNR states "The intent will be to determine the optimum method(s) for reducing fish entrainment at our project sites, given realistic operating and maintenance constraints. Appropriate new developments and alternative methods will be considered along with or instead of currently proposed measures, as the process continues."

In its letter dated May 6, 1993, and at the 10(j) meeting, Wolverine requested that the Commission, for any license issued for the Tower and Kleber Project, specifically allow Wolverine, in consultation with the Michigan DNR, to include new developments and alternative methods in its evaluation process, and if deemed appropriate, to install fish protection measures other than those specifically mentioned in the EA.

At the 10(j) meeting, Commission staff, Wolverine, and Michigan DNR agreed that a certain degree of flexibility in the 4-year phased approach to providing fish protection at the Tower and Kleber Project is warranted, and that such language should be incorporated into any license issued for the project. This flexibility would permit substitution of technology or the re-ordering of fish protection measures upon agreement between Wolverine and the Michigan DNR.

With regards to fish valuation, the Michigan DNR, in its letter of June 1, 1993, recommends that Wolverine conduct a fishery damage assessment, in consultation with the Michigan DNR, or pay the Michigan DNR restitution value for the lost fishery resources in the amount equal to that determined by application of Public Act 165 of 1929 as amended (Michigan Compiled Laws 305.13). Commission staff disagree with both aspects of this recommendation.

The fish damage assessment recommended by Michigan DNR is based on a CERCLA (Comprehensive Environment Response and Cleanup Liability Act of 1980, P.L. 96-510) methodology. The staff argued that such methodology is not appropriate in this case.

CERCLA, while dealing with liability, is based on intent or negligence. While Wolverine may be killing a portion of the fish that pass through the turbines at the Tower and Kleber Project, Wolverine is not intentionally taking fish. Further, the fish that are lost from operation of the Tower and Kleber Hydroelectric facility should not be considered similar to fish kills resulting from contaminant spills, because they will be a direct consequence of lawful operation of the project under a federal license.

The Michigan State Legislature has codified a valuation method providing for restitution, which the Michigan DNR, in the absence of a site-specific fish damage assessment, seeks to apply to the Tower and Kleber Project. The Michigan DNR states that the fish are the State's property and their loss to entrainment mortality is an "illegal taking." The Michigan DNR's restitution value is said to include both the replacement and social (i.e., option and existence) value of the entrained fish.

As support for using option and existence values, the Michigan DNR erroneously cites Utah v. Kennecott Corp. (Civ. No. 86-C-0902G, September 3, 1992). This case is not applicable here, as it is a case involving contaminated groundwater and associated human health impacts. Although Commission staff agrees with the Michigan DNR that the analysis upheld in Utah, may be appropriately used for fisheries resources in certain circumstances, this does not include cases, like the Tower and Kleber Project, where future uses of a fishery would not be compromised by turbine entrainment mortality.

The Michigan DNR views fish loss due to turbine entrainment mortality as an "illegal taking." Staff disagrees. The staff considers turbine mortality to be incidental to operating a licensed project, and considers such losses along with other factors in issuing a license.

Staff believes the value that Michigan DNR seeks to place on entrained fish is excessive. Staff does not understand what method is used by Michigan DNR to account for option and existence values, in light of the values assigned to different fishes killed at the project. For example, the Michigan DNR values a small juvenile black crappie the same as a one-pound brown trout; the value is $10.00, each. Staff cannot agree that the appropriate value for a juvenile crappie, which would cost less than $0.50 to replace, is $10.00.

In its written comments and at the □ 10(j) meeting, Michigan DNR consistently held that the Commission has no right to value the property of the State of Michigan. Staff disagrees. The Commission is mandated to make licensing decisions that represent the best comprehensive use of the waterway. Certainly, staff considers the values that the state places on its resources, but

when it cannot support the appropriateness of these values, staff must develop other values based upon accepted methodologies. In its analysis, staff used replacement values accepted by the American Fisheries Society. The Michigan DNR and Commission staff did not agree at the 10(j) meeting on the valuation of fishes killed.

Commission staff concludes that replacement values are appropriate for the fish losses at the Tower and Kleber Project, and that requiring the Licensee to conduct Michigan DNR's fish damage assessment, or assume compensation based on restitution value, would not, under current conditions, promote the best comprehensive use of this waterway. In an effort to reach a compromise on the fish valuation issue, the Michigan DNR, at the 10(j) meeting, suggested that a settlement could be reached, which would provide a value for the fishery affected. Wolverine and Commission staff accepted this approach.

The March 1, 1994 settlement agreement between Wolverine and the Michigan DNR includes the following:

(1) For the first four years after the issuance of the license, during the time that Wolverine is installing and testing various fish loss mitigation measures at the Tower and Kleber dams, no fish loss damages will be paid by Wolverine. Thereafter, losses based upon regular electronic and/or manual fish counts will be paid by Wolverine with a cap not to exceed $35,000 (in 1993 dollars) per year adjusted by the Consumers Price Index (CPI). Reductions in fish losses resulting from successful mitigation efforts of Wolverine would reduce the $35,000 proportionately.

(2) Beginning four years after the effective date of the license for the Tower and Kleber Project, Wolverine will annually contribute up to $35,000 to the State of Michigan Habitat Improvement Account (Account), which will be used for fish habitat restoration or enhancement, preparing comprehensive river management plans, aquatic studies, fisheries recreation, water quality improvement, and soil erosion control activities on the Black River. Contributions made to the Account will be by check made payable to the State of Michigan by October 1 of each year for the previous 12-month period, or any portion thereof, and forwarded to the Assistant Attorney General in charge of the Natural Resources Division for deposit to the Account. For any period of time in which this settlement is in place and one or more of the units associated with the Tower and Kleber Project are not operating due to maintenance, or other scheduled or unscheduled outages, the payments will be adjusted downward accordingly.

(3) Each year, Michigan DNR will consult in advance with

Wolverine regarding the expenditure of contributions made to the Account prior to Michigan DNR authorizing an activity. The Michigan DNR will not obtain Commission approval of any activity, except where it would require modification of the project license. The Michigan DNR will provide an annual report to the Commission and Wolverine detailing the expenditures made from the Account by December 1 of each year.

Staff agrees with the provisions of this agreement, and I am requiring these provisions be included as license conditions for the Tower and Kleber Project.

With regard to the compensation mechanism for residual fish losses, the Michigan DNR, at the 10(j) meeting, requested clarification regarding the mechanism by which payments for residual fish losses would be accomplished. In its June 1, 1993, letter, the Michigan DNR stated that it cannot agree with Wolverine undertaking fish management activities, an activity which Wolverine is not authorized to conduct in the state of Michigan. The Michigan DNR also stated that compensation should be provided to the State of Michigan, as stated in their recommended license condition.

At the 10(j) meeting, staff indicated that payments for residual fish losses would be accomplished in two different ways. First, Wolverine, in consultation with the resource agencies, would be required to develop fisheries management plans. A second approach would require Wolverine to file with the Commission an agreement between Wolverine and the resource agencies for Michigan DNR to allocate funds at its discretion for specific fisheries management plans. The Michigan DNR concluded that these two options satisfied their concerns about compensating for residual fish losses, and agreed with the approach.

Article 407 of this license requires the Licensee to implement a fish protection plan (including providing monetary compensation for residual fish losses) in accordance with the settlement agreement.

Upstream Fish Passage

Staff estimates the cost of Denil fish ladders, similar to one used at projects in Canada (Katopodis, 1991 2/), for the Tower and Kleber Project at $1,814,000 in 1994 dollars --

2/ Katopodis, C., A.J. Derksen, and B.L. Christensen (1991). Assessment of two Denil fishways for passage of freshwater species. Fisheries Bioengineering Symposium. American Fisheries Society Symposium (10:306-324).

extrapolated on a per-foot-of-head basis from the Fairford wooden fishway in Manitoba, Canada -- and that such a fish ladder would cost Wolverine about $178,000 annually when levelized over a 30-year licensing period, or about 55.2 mills per kilowatt-hour (kWh), assuming an annual generation of 7.5 gigawatt-hours (GWh).3/

The limited number of studies on the effectiveness of Denil fish ladders passing resident fishes indicate that some resident species may utilize Denil fishways, although generally low percentages of sport fish tagged in the tailwaters have been observed to ascend the fishways. In order to evaluate the appropriateness of providing Denil or any other type of fishways at the Tower and Kleber Project, I would require evidence to support the need for fish passage by the resident species at the project, the expected use of the fishway by these fishes, and the expected benefits of such a passage program, in terms of fish production, recreational enhancement, and any other benefits.

The Michigan DNR is currently evaluating the need for fish passage in the Cheboygan River Basin, including the Black River. The Michigan DNR intends to develop a river management plan that would address resident fish passage at the Tower and Kleber

Project. If the above data become available and Michigan DNR concludes that fish passage is warranted at the Tower and Kleber Project, the Michigan DNR's request for fish passage, including supporting documentation, should be submitted to the Commission for consideration under the standard re-opener clause.4/

Should the Michigan DNR submit evidence under the re-opener, and if it is determine that it is appropriate to install and operate upstream fish passage facilities at the Tower and Kleber Project, the Commission would consider the installation and operation of such facilities. Based upon this understanding of the application of the standard re-opener clause, the Michigan DNR agreed at the 10(j) meeting that a special re-opener for

3/ Staff's estimate does not include costs associated with replacing the facility in less than 30 years (if it is constructed of treated lumber) and reduced generating flows. Staff's estimate does include costs associated with operation and maintenance ($10,000/year in 1994 dollars), contingencies (15 percent of fishway costs) and engineering (10 percent of fishway costs).

4/ The Michigan DNR may also seek fish passage through Interior via the Section 18 fishway prescription. Article 408 of this license reserves authority to the Commission to require the licensee to construct, operate, and maintain such fishways as may be prescribed by Interior pursuant to Section 18 of the FPA.

fish passage is unnecessary for the Tower and Kleber Project.

Lake Sturgeon Management Plan

The Michigan DNR disagrees with the staff's finding that Wolverine's responsibility for impacts on the lake sturgeon be limited to operational considerations. At the 10 (j) meeting, Michigan DNR stated that the intent of Michigan DNR's original recommendation was for Wolverine's cooperation in the development of the lake sturgeon management plan. The Michigan DNR and FWS clarified that Michigan DNR would develop the lake sturgeon management plan for the Black River, and implement the plan with Wolverine's cooperation. I agree with this approach.

In their written correspondence, the Michigan DNR stated that they are seeking full participation by Wolverine in the plan for such items as bank stabilization, propagation, and habitat improvement (i.e., the addition of spawning substrate) for lake sturgeon. While staff agrees with Wolverine's involvement in implementing a lake sturgeon management plan, staff also recommends that such involvement be limited to any reasonable activities, including operational considerations for the Tower and Kleber Project, certain habitat improvement measures within areas influenced by project operation, and fish inventories.

Regarding habitat improvement, the Michigan DNR is recommending that Wolverine be responsible for reclaiming specific erosion areas in the Black River downstream of the Kleber development (6 to 7 miles downstream to Black Lake). Commission staff disagrees. Wolverine should not be responsible for reclaiming and monitoring erosion sites in the 6 to 7 mile stretch of the Black River downstream from Kleber dam to Black Lake, as this area was likely not influenced by the historical operation of the Tower and Kleber Project, nor would it likely be influenced by the future operation of the project. However, Wolverine should be responsible for erosion areas in, and around, the project site.

At the 10(j) meeting, Commission staff and Michigan DNR agreed that Wolverine would play a somewhat broader role in the implementation of a lake sturgeon management plan for the Black River. However, management activities that Wolverine would be engaged in would be limited in scope, and the formalized plan required by this license would need to define the type of reasonable activities Wolverine would cooperate with the Michigan DNR to implement. The Michigan DNR, at the 10(j) meeting, suggested that a settlement could be reached, which would identify such measures for Wolverine's involvement. Wolverine and Commission staff accepted this approach.

On March 1, 1994, the Michigan DNR filed with the Commission, the settlement agreement for lake sturgeon management

on the Black River. The provisions of this plan are as follows:

> It has been agreed between Wolverine and the MDNR that Wolverine will assist the MDNR in its involvement as to the enhancement of sturgeon propagation; however, it is agreed that for the time being no significant facilities such as a pond or shed (rearing facility) will need to be constructed by Wolverine for such purposes at this time. In the future, should a rearing facility be necessary for the sturgeon propagation activities of the MDNR, Wolverine will work with the MDNR in constructing the rearing facility. The plan for the rearing facility will be developed by MDNR, in consultation with Wolverine and filed with the Commission by Wolverine. The plan will describe the type of facility, construction schedule, and Wolverine's obligation with respect to the rearing facility. Upon Commission approval, Wolverine will implement the plan. Further, Wolverine will continue to work with the MDNR in operating the Kleber dam so as to allow the MDNR to continue its present lake sturgeon habitat protection and propagation activities below the project.

Staff agrees with the provisions of this agreement, and I am requiring these provisions be included as license conditions for the Tower and Kleber Project.

Article 406 of this license requires the Licensee to cooperate with the Michigan DNR in managing the Lake sturgeon in the Black River per the March 1, 1994 settlement agreement.

PROJECT OPERATION

Streamflow Gaging

In the EA for the Tower and Kleber Project, Commission staff determined that streamflow gaging was outside the scope of 10(j). At the 10(j) meeting, the Michigan DNR questioned the staff's determination that streamflow gaging was not a 10(j) recommendation. The Michigan DNR supported their position by stating that without streamflow gaging, there is no way to detect compliance with run-of-river operation. Commission staff agrees that streamflow gaging should be a 10(j) recommendation.

In written comments and at the 10(j) meeting, the Michigan DNR maintained that a contingency plan is needed to ensure that the Tower and Kleber project is operated in a run-of-river mode. On page 14 of the EA, staff concluded that the installation of a new upstream U.S. Geological Survey (USGS) gaging station was not necessary to monitor compliance with run-of-river operation. At the 10(j) meeting, Commission staff stated that the objection was not with the need for a contingency plan, but that maintaining the Michigan DNR's recommended ñ5 percent flow

differential between the upstream and downstream gaging stations could be a potential problem.

To reach a compromise, the Michigan DNR and Commission staff, at the 10(j) meeting, agreed to a phased approach to monitoring compliance with run-of-river operation at the Tower and Kleber Project. Wolverine would be required to implement a 3-year test period to determine the adequacy of the proposed headpond elevation and streamflow monitoring measures to maintain run-of-river operation. At the end of 3 years, compliance with run-of-river, based on the proposed monitoring system, would be evaluated. If compliance with run-of-river can not be adequately proven by Wolverine's proposed streamflow monitoring system, Wolverine would be required to install, operate, and maintain an upstream USGS gaging station.

Article 404 of this license requires the Licensee to develop and implement a monitoring plan that includes a provision for installing an upstream USGS gaging station at the end of 3 years, if needed.

TERRESTRIAL

Threatened and Endangered Species

The Michigan DNR stated that while it supported the Commission's efforts to enhance and protect the bald eagles' habitat and forage base, Michigan DNR objected to "the specific license article language which may preclude Wolverine from participating in State mandated fisheries management activities and to the 1,320-foot buffer zone for bald eagle feeding areas." The Michigan DNR further stated that its recommended threatened and endangered species plan would afford the site specific protection needed to meet the needs of the bald eagles, and the needs of the recreationists which use the project area.

The two measures to which the Michigan DNR referred are:

> "c. To restrict human activity, such as bird watching and hiking, in consistently used bald eagle feeding area(s) by posting the area(s). A distance of 1,320 feet is recommended as a minimum buffer zone for human presence"; and
>
> "e. To protect the forage base of the bald eagle, the Licensee shall not participate in, encourage, or support the removal of rough fish, such as carp, sucker, or bullhead, in the stream sections within the project boundary."

During the meeting, the Commission staff, Michigan DNR, and FWS agreed that the addition of language to the recommendations which reflects a process for identification of foraging areas and

establishment of exclusionary zones around those areas, as well as conditions under which Wolverine could participate in State mandated fisheries activities, would settle the disagreement. The Michigan DNR further agreed that a threatened and endangered species plan would not be needed if the above conditions are included in an article in the license. The bald eagle article reflecting the decision reached during the meeting, Article 410, addresses Michigan DNR and FWS's concerns.

I agree to the addition of further language regarding exclusionary zones around the foraging areas (i.e., who has the responsibility to identify foraging areas, and once identified, the distances of exclusionary zones); and to the inclusion of language requiring the Licensee to file with the Commission for approval, upon completion of consultation with the FWS and Michigan DNR, any plan which would require the participation of the Licensee in rough fish removal from the project reservoirs or stream sections within the project.

OTHER ISSUES

Soil Erosion Control Plan

During the meeting, Wolverine and Michigan DNR agreed to attempt to settle disagreement over the need for an erosion plan for the project. There was no evidence to warrant requiring the plan and it may not be possible to determine, in some cases, a direct link between the project operations and soil erosion. However, Wolverine agreed to do a joint survey with Michigan DNR of the projects' reservoirs, evaluate the causes of any erosion found, and cooperate with the Michigan DNR in the maintenance and reclamation of areas that are directly affected by project operations. Michigan DNR suggested that a settlement could be reached, which would outline the areas that need to be reclaimed and the role of Wolverine in the reclamation and monitoring of those sites. Wolverine agreed.

As a result of the meeting, the settlement agreement filed by the Michigan DNR on March 1, 1994, also contains the following provisions regarding soil erosion at the project:

> As to possible erosion sites above and below both dams, the parties agree that a joint survey would be made and that repair and restoration of identified sites would be undertaken. [Wolverine] and the MDNR have jointly surveyed the area and initially inventoried a total of two sites, both on private property, as needing restoration activity. Bank stabilization, restoration, and seeding of these sites has been initiated by [Wolverine]; hereafter, [Wolverine] will take reasonable action to maintain the seeding to ensure appropriate vegetative growth. Erosion sites caused by project operation that are identified in the future will

be repaired by [Wolverine]. Future identified erosion on state land caused by activity other than project operation shall be the responsibility of the MDNR.

Staff agrees with these provisions of the settlement agreement, and I am requiring these provisions be included as a license condition for the Tower and Kleber Project.

Article 413 of this license requires the Licensee to cooperate with the Michigan DNR in identifying and repairing erosion sites caused by project operation per the March 1, 1994, settlement agreement.

Recreation

At the Section 10(j) meeting, the Michigan DNR withdrew its original opposition to the Licensee's charging user fees at recreation sites where more than a minimum level of access is provided. The Licensee would address this issue in detail in its recreation report to be filed with the as-built drawings in accordance with Article 411 of the license.

COMPREHENSIVE PLANS

Section 10(a)(2) of the FPA requires the Commission to consider the extent to which a project is consistent with Federal or state comprehensive plans for improving, developing, or conserving a waterway or waterways affected by the project. Under Section 10(a)(2), Federal and state agencies filed a total of 47 plans for Michigan and 7 for the United States. Staff has determined that 2 of these plans are relevant to this project.5/ No conflicts were found. Although Michigan's recreation plan (1985) shows no need for improving resource-based recreational opportunities in Cheboygan County, the DNR has identified a need for improved public access at the project, especially facilities for the disabled. I conclude that the phased approach to recreation development proposed by Wolverine would be consistent with Michigan's recreation plan.

COMPREHENSIVE DEVELOPMENT

Sections 4(e) and 10(a)(1) of the FPA, require the Commission to give equal consideration to all uses of the waterway on which a project is located. When the Commission reviews a project, the recreation, fish and wildlife, and other

5/ Michigan Department of Natural Resources, Building Michigan's recreation future: the 1985-90 Michigan recreation plan, 1985; and Fish and Wildlife Service and Canadian Wildlife Service, North American Waterfowl Management Plan, May 1986.

nondevelopmental values are considered equally with power and other developmental values. In determining whether, and under what conditions, a hydropower license should be issued, the Commission must weigh the various economic and environmental tradeoffs involved in the decision.

Recommended Alternative

Based on staff's independent review and evaluation of the project, the project with additional environmental measures, and the no-action alternative, I have selected the project, with additonal enhancement measures, as the preferred option. I selected this option because overall these measures along with the standard articles would protect or enhance fish resources, water quality, recreational resources, cultural resources, and protect existing and undiscovered archeological sites. Also, the electricity generated from the project would continue to off-set the use of fossil-fueled, electrical generating plants, conserve non-renewable energy resources, and reduce atmospheric pollution.

The measures included in this license require the Licensee to:

(a) operate the project in run-of-river mode;

(b) provide passage of streamflow equal to inflow into the project during emergency shutdowns;

(c) implement a water quality monitoring plan;

(d) limit winter draw down to no more that 1 foot;

(e) cooperate with DNR to develop a formal Lake sturgeon management plan, however participation will be limited to operational considerations only;

(f) implement a turbine and entrainment protection and mitigation plan;

(g) implement a monitoring plan for compliance with dissolved oxygen and temperature limits;

(h) implement a plan to control/eliminate noxious water plants when deemed appropriate;

(i) cooperate with the Michigan DNR in identifying and repairing soil erosion caused by project operation;

(j) implement a bald eagle protection measures; and

(k) protect any previously undiscovered properties that may be eligible for listing on the National Register of Historic Places;

The above measures would adequately protect or enhance aquatic resources as well as recreational fishing, and their costs are included in the economic evaluation of the project.

Developmental and Nondevelopmental Uses of the Waterway

A project would be economically beneficial, so long as its projected levelized cost is less than the levelized cost of alternative energy and capacity.

Staff has prepared an economic analysis for the project with enhancement measures. The project with the above-mentioned enhancement measures would provide a number of benefits. An estimated 7,498.5 MWh of relatively low-cost electricity would continue to be generated annually from a clean, domestic, reliable, and renewable energy resource for use by seven of Wolverine's nearby wholesale cooperative customers. 6/

The 30-year levelized value of alternative power would be about $242,510 annually or 32.33 mills/kWh, and the project's levelized cost would be about $173,600 annually or 23.09 mills/kWh. The project would have levelized net annual benefits of $69,350 or 9.24 mills/kWh. There would be beneficial effects to the environment associated with the licensing of the Tower and Kleber Hydro Project and the above-mentioned enhancement measures required for the protection of natural resources. The project is economically beneficial with the enhancement measures.

PROJECT RETIREMENT

Both the Michigan DNR and the Michigan Hydro Licensing Coalition disagreed with the Commission's recommendation not to require Wolverine, 10 years after license issuance, to begin consulting with Michigan DNR on a plan for studying the costs of (1) permanent non-power operation, (2) partial project removal, and (3) complete project removal, without implying any obligation on Wolverine's part to retire the project or not seek additional new licenses for it. The details of this recommendation and staff's opposition to it are explained in the EA.

The Commission has issued a Notice of Inquiry (NOI), dated September 15, 1993, requesting comments that address the potential decommissioning of licensed hydropower projects at some

6/ The electricity potentially generated by the proposed project is equivalent to the energy that would be produced by burning 3,147 tons of coal annually in a steam-electric power plant.

future time, based on project-specific circumstances. 7/ The NOI states that the Commission is not proposing new regulations at this time, but is inviting comments on whether new regulations may be appropriate. Alternatively, the Commission may consider issuing a statement of policy addressing the decommissioning of licensed hydropower projects, or take other measures. The Tower and Kleber Project may be affected by future actions that the Commission takes with respect to issues raised in the NOI. Therefore, the license includes Article 204, which reserves authority to the Commission to require the licensee to conduct studies, make financial provisions, or otherwise make reasonable provisions for decommissioning of the project in appropriate circumstances. The terms of Article 204 are effective unless the Commission, in Docket No. RM 93-23, finds that it lacks statutory authority to require such actions.

By including Article 204, the Commission does not intend to prejudge the outcome of the NOI. We are simply including the article so that we will be in a position to make any lawful and appropriate changes in the terms and conditions of this license, which is being issued during the pendency of the NOI, based on the final outcome of that proceeding.

LICENSE TERM AND BACK ANNUAL CHARGES

The Tower and Kleber Hydro Project began electric operation in 1918. This license authorizes no new construction. Accordingly, pursuant to the license term policy articulated in City of Danville 8/, I will give the license a prospective term of thirty years.

The project affects the Black River that was found navigable based on a navigation status report prepared by the Commission's Chicago Regional Office in May of 1939. As articulated in City of Danville, it is Commission policy to require, in a license for a previously unauthorized existing pre-1935 project located on a navigable waterway, payment of an amount equivalent to the annual charges that would have been collected from April 1, 1962, unless there was an earlier specific navigability finding, or January 1, 1938, whichever is later. Consequently, I will condition the license issued herein upon payment of an amount equivalent to annual charges that would have been paid, had the license been obtained on May 1, 1939.

7/ Notice of Inquiry, Project Decommissioning at Relicensing, Docket No. RM93-23-000, September 15, 1993.

8/ City of Danville, Virginia, Project No. 10896, 58 FERC 61,318 (1992).

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 SDA.

I conclude 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 Wolverine Power Supply Cooperative, Inc. (Licensee), for a term of thirty years, effective the first day of the month in which this order is issued to operate and maintain the Tower and Kleber Hydro Project. This license is subject to the terms and conditions of the FPA, which are incorporated by reference as part of this license, and subject to the regulations the Commission issues under the provisions of the FPA.

(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:

Exhibit G-	FERC No. 10615-	Showing
G-1	17	Project Location
G-2	18	Project Location
G-3	19	Project Location

(2) Project works consisting of the following two developments.

A. The Tower Hydroelectric Development which consists of: (1) a 727-foot-long and 29.3-foot-high concrete gravity dam consisting, from right to left looking downstream, (a) a short embankment section, (b) a powerhouse section, (c) a 110-foot-long gated spillway section, (d) a 194-foot-long concrete non-overflow section, and (e) a 350-foot-long concrete core wall section; (2) an intake structure integral

with the powerhouse equipped with 4 vertical timber slide headgates; (3) a brick/reinforced concrete powerhouse 35 feet long by 32 feet wide and 50 feet high, integral with the dam, housing two 280-kW generating units with a total installed capacity of 560-kW; (4) a non-operational sluiceway; (5) a 102-acre reservoir having a maximum storage capacity of 620 acre-feet at 722.1 feet m.s.l.; (6) a 150-foot-long, 2.4-kV transmission line connecting the Tower generator plant bus to the Tower switchyard bus; and (7) appurtenant facilities.

B. The Kleber Hydroelectric Development which consists of; (1) a 535-foot-long and 40-foot-high earth dam; (2) a 12-foot-long ogee type spillway controlled by a Taintor gate and a 200-foot-long uncontrolled emergency spillway; (3) an intake structure equipped with two vertical lift gates; (4) a reinforced concrete powerhouse 42 feet long by 40 feet wide and 54 feet high, housing two 600-kW generating units with a total installed capacity of 1,200-kW; (5) two 84-inch diameter, 139-foot-long steel penstocks; (6) a 295-acre reservoir having a maximum storage capacity of 3,000 acre-feet at 701.1 feet m.s.l.; (7) a 4-mile-long, 12.5-kV transmission line connecting the Kleber generator plant bus to the Presque Island distribution load top; and (8) appurtenant facilities.

The project works generally described above are more specifically shown and described by those portions of exhibits A and F shown below:

Exhibit A: The following sections of exhibit A filed February 21, 1989:

Pages 1 through 13 and Figure A-1, describing the existing mechanical, electrical and transmission equipment, filed February 21, 1989.

Exhibit F drawings	FERC NO.	Showing
Sheet F-1	10615-1	Kleber Dam Component Project Features
Sheet F-2	10615-2	Kleber Dam Component Dam and Powerhouse Arrangement
Sheet F-3	10615-3	Kleber Dam Component Dam Profile
Sheet F-4	10615-4	Kleber Dam Component Dam Sections

Sheet F-5	10615-5	Kleber Dam Component Spillway and Intake Plan and Sections
Sheet F-6	10615-6	Kleber Dam Component Spillway and Intake Elevation and Section
Sheet F-7	10615-7	Kleber Dam Component Powerhouse Plans and Section
Sheet F-8	10615-8	Kleber Dam Component Powerhouse Elevations
Sheet F-9	10615-9	Kleber Dam Component Emergency Spillway Plan and Sections
Sheet F-10	10615-10	Tower Dam Component Project Features
Sheet F-11	10615-11	Tower Dam Component Spillway Plan and Elevation
Sheet F-12	10615-12	Tower Dam Component Gated Spillway Sections
Sheet F-13	10615-13	Tower Dam Component Overflow Spillway Sections
Sheet F-14	10615-14	Tower Dam Component Dam Sections
Sheet F-15	10615-15	Tower Dam Component Powerhouse Plans and Sections
Sheet F-16	10615-16	Tower Dam Component Powerhouse Elevations

(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 all riparian or other rights that are necessary or appropriate in the operation or maintenance of the project.

(C) The exhibits A, F, and G described above are approved and made part of the license.

(D) This license is subject to the articles set forth in Form L-3, (October 1975), entitled "Terms and Conditions of License for Constructed Major Project Affecting Navigable Waters of the United States," and the following additional articles:

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

(a) For the purposes of reimbursing the United States for the cost of administration of Part I of the FPA as determined by the Commission. The authorized installed capacity for that purpose is 2,400 horsepower.

Article 202. The Licensee shall pay the United States an amount equal to the annual charges for administrative costs that would have been assessed for the period from May 1, 1939 to the effective date of this license, if the project had been licensed during that period. The authorized installed capacity for that purpose is 2,400 horsepower.

Article 203. Within 90 days from the date of issuance of this license, the Licensee shall file with the Commission: (a) a statement which includes the dates and amounts of each change in installed capacity of the project since May 1, 1939; (b) a statement showing the gross amount of power generation for the project in kilowatt-hours for each calendar year commencing May 1, 1939, in accordance with the provisions of 18 C.F.R. Part 11 of the Commission's regulations.

Article 204. The Commission reserves authority, in the context of a rulemaking proceeding or a proceeding specific to this license, to require the Licensee at any time to conduct studies, make financial provisions, or otherwise make reasonable provisions for decommissioning of the project. The terms of this article shall be effective unless the Commission, in Docket No. RM93-23, finds that the Commission lacks statutory authority to require such actions or otherwise determines that the article should be rescinded.

Article 401. Within 180 days from the date of issuance of this license, the Licensee shall file with the Commission, for approval, a plan to monitor dissolved oxygen (DO) and temperature of the Black River upstream of the Tower reservoir (in the project headrace), directly downstream of Tower dam (tailrace area) and downstream of the Kleber powerhouse (tailrace area), and to maintain state water quality standards.

The purpose of this monitoring plan is to provide data adequate to determine if streamflows below the project, as measured immediately downstream of the Tower dam and Kleber dam, maintain the following standards, which the Licensee is required

to implement reasonable measures to maintain, for DO concentration and temperature when river discharges are greater than or equal to the 95% exceedence flow:

(a) DO concentrations in the project tailwaters not less than 7 milligrams per liter (mg/l) at any time unless Wolverine demonstrates to the Michigan Department of Natural Resources (Michigan DNR) that these DO limits are not attainable through further feasible and prudent measures or the variation between the daily average and daily minimum DO concentrations in the river exceeds 1 mg/l as measured upstream from the project. If the Michigan DNR agrees with Wolverine's demonstration, DO concentrations in project tailwaters shall not be less than 6 mg/l at any time during the warm weather season (June through September) until such time as the Michigan DNR prepares and implements a comprehensive plan as described in the State of Michigan water quality standards to upgrade these waters to 7 mg/l at any time;

(b) temperature in the project tailwaters no greater than a monthly average of 2 degrees Fahrenheit (èF) higher than the temperature as measured upstream of the project; and

(c) monthly average temperatures downstream of the project no greater than:

January, February --	38èF
March ----------	43èF
April ----------	54èF
May ----------	65èF
June - August ------	68èF
September ----------	63èF
October ----------	56èF
November ----------	48èF
December ----------	40èF

These monthly average temperatures may be exceeded for short periods with approval from the Michigan DNR when natural water temperatures measured upstream of the project exceed the ninetieth percentile occurrence of water temperatures (i.e., the monthly average temperatures cited in item c, minus the allowable 2èF deviation allowed in item b). In all cases, temperature increases shall not be greater than the natural water temperature as measured upstream of the project plus the increase allowed in item b.

The monitoring plan shall include provisions for (1) continuous monitoring of dissolved oxygen and temperature above the Tower reservoir, below Tower dam, and downstream of the Kleber powerhouse with the sensor locations determined in consultation with the Michigan DNR and FWS; and (2) the preparation of operating procedures developed in consultation

with the Michigan DNR and the FWS to address water quality conditions which deviate from the above limits.

The Licensee shall prepare the plan after consultation with the U.S. Fish and Wildlife Service (FWS) and the Michigan DNR. The water quality monitoring plan shall include a schedule for:

(a) implementation of the program (must be implemented within 24 months from the date of issuance of this license);

(b) consultation with the Michigan DNR and the FWS concerning the results of the monitoring; and

(c) filing the results, agency comments, and Licensee's response to agency comments with the Commission.

The Licensee shall include with the plan documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the agencies, and specific descriptions of how the agencies' comments are accommodated by the plan. The Licensee shall allow a minimum of 30 days for the agencies to comment and make recommendations before filing the plan with the Commission. If the Licensee does not adopt a recommendation, the filing shall include the Licensee's reasons, based on project-specific information.

The Commission reserves the right to require changes to the plan. Upon Commission approval, the Licensee shall implement the DO and temperature monitoring plan, including any changes to the plan required by the Commission.

Article 402. The Licensee shall operate the project in a run-of-river mode for the protection of water quality and aquatic resources in the Black River. The Licensee shall at all times act to minimize the fluctuation of the reservoir surface elevations by maintaining a discharge from the project so that, at any point in time, flows, as measured immediately downstream from the project tailrace, approximate the sum of inflows to the project reservoirs. Under normal operating conditions, the Licensee shall maintain the Tower reservoir at a target elevation of 722.1 feet National Geodetic Vertical Datum (NGVD), and the Kleber reservoir at a target elevation of 701.1 feet NGVD.

Prior to project automation, as required by article 404 to monitor compliance with run-of-river operation, fluctuations shall be limited to ñ0.5 foot around the target elevations. Thereafter, fluctuations shall be limited to ñ0.25 foot around the target elevations. The Licensee shall notify the Commission within 30 days of implementing the automation system in order to identify the date that project automation is to begin and when the required fluctuation limit shall be reduced to ñ0.25 foot.

Run-of-river operation may be temporarily modified if required by operating emergencies beyond the control of the Licensee, during periods where inflows exceed project's hydraulic capacity, or for short periods upon mutual agreement between the Licensee and the Michigan Department of Natural Resources (Michigan DNR). If the flow is so modified, the Licensee shall notify the Commission as soon as possible, but no later than 10 days after each such incident.

Article 403. To protect aquatic habitat downstream of Tower dam and Kleber dam, the Licensee shall pass inflow through the project during emergency periods when the project is shut down (i.e., during power outages or maintenance activities).

Article 404. Within 180 days from the issuance date of this license, the Licensee shall file with the Commission, for approval, a plan to monitor compliance with the run-of-river mode of operation, and to provide for flow continuation during project shutdown, as stipulated by articles 402 and 403, respectively.

The monitoring plan shall include provisions for: (a) providing funds to operate and maintain the existing downstream U.S. Geological Survey (USGS) gaging station (USGS Gage No. 04130500); (b) installing continuous level recording devices (or the project automation system) on both the Tower and Kleber

reservoirs and tailwaters to ensure flow continuation during power outages and determine instantaneous headwater and tailwater elevations; (c) implementing a 3-year test period to determine the adequacy of the existing downstream USGS gaging station and proposed project automation system to maintain run-of-river operation, as stipulated by Article 402; and (d) installing, operating, and maintaining an upstream USGS gaging station, if needed, to determine instantaneous project inflow and outflow.

The plan shall include, but not be limited to, the proposed location, design, and calibration of the monitoring equipment, the method of flow data collection, and a provision for providing flow data to the U.S. Fish and Wildlife Service (FWS), the USGS, and the Michigan Department of Natural Resources (Michigan DNR) within 30 days from the date of the agency's request for the data.

The monitoring plan shall also include a schedule for:

(1) implementation of the program;

(2) consultation with the appropriate federal and state agencies concerning the data from the monitoring; and

(3) filing the data, agency comments, and Licensee's response to agency comments with the Commission.

The Licensee shall prepare the plan after consultation with the FWS, the USGS, and the Michigan DNR. The Licensee shall include with the plan documentation of consultation and copies of comments or recommendations on the completed plan after it has been prepared and provided to the agencies, and specific descriptions of how the agency comments are accommodated by the plan. The Licensee shall allow a minimum of 30 days for the agencies to comment and to make recommendations prior to filing the plan with the Commission. If the Licensee does not adopt a recommendation, the filing shall include the Licensee's reasons, based on project specific information.

The Commission reserves the right to require changes to the plan. Upon Commission approval, the Licensee shall implement the plan, including any changes required by the Commission.

Article 405. To protect fishery resources in the project reservoirs, and in consultation with the Michigan Department of Natural Resources (Michigan DNR), the Licensee shall limit the winter reservoir drawdown in the Tower and Kleber reservoirs to no more than 1 foot from November 1 through March 31.

Article 406. To protect and enhance lake sturgeon and lake sturgeon habitat in the Black River Basin, the Licensee shall, in accordance with the terms and provisions of section 4.0 of the "Settlement Agreement between Wolverine Power Supply Cooperative (Licensee) and the Michigan Department of Natural Resources (MDNR)," cooperate with the MDNR in implementing the MDNR's lake sturgeon management plan for the Black River Basin.

The Licensee, in consultation with the MDNR shall file annual status reports with the Commission, beginning 1 year after any license is issued for the Tower and Kleber Project, outlining the progress and activities engaged in by the Licensee as part of the MDNR's lake sturgeon management plan. The annual status reports shall be filed with the Commission by October 1 of each year, and shall include a description of the progress and activities engaged in during the previous year and the expected progress and activities to be engaged in during the upcoming year.

Article 407. Within 180 days from the date of issuance of this license, the Licensee shall file with the Commission, for approval, a turbine mortality and entrainment protection and mitigation plan. The fish protection and mitigation plan shall include provisions for □ contacting a qualified consultant in designing fish protection devices; □ designing and conducting an evaluation of all potential fish protection devices to prevent fish losses at the Tower and Kleber Project; and □ to develop the 4 year phased approach to prevent turbine mortality at the Tower and Kleber Project outlined in the December 4, 1992, letter from the Michigan Department of Natural Resources (MDNR).

Per agreement between the Licensee and the MDNR, the stages of the 4-year program, in order, shall include: (1) the installation of a new bar rack; (2) addition of an electrical field to the bar rack; (3) the installation of a barrier net; and (4) the installation of a Louver system. The Licensee shall also evaluate the effectiveness of each device using a study plan similar to that used for the entrainment study, which is to be developed in consultation with the MDNR. In accordance with this agreement, should new developments and alternative methods to providing fish protection be identified during the 4-year program, the Licensee, in consultation with the MDNR, shall include such new developments and alternative methods in the evaluation process.

In the event that no device provides 100 percent fish protection, the plan shall include provisions for the Licensee to provide payment, in accordance with the terms and provisions of section 5.0 of the "Settlement Agreement between Wolverine Power Supply Cooperative (Licensee) and the MDNR," for any residual fish killed by operation of the Tower and Kleber Project.

The fish protection and mitigation plan shall also include a schedule for:

(1) implementation of the plan;

(2) consultation with the appropriate federal and state agencies concerning the data from each phase of the plan; and

(3) filing the data, agency comments, and Licensee's response to agency comments for each phase of the plan with the Commission.

The Licensee shall prepare the plan after consultation with the MDNR and the FWS. The Licensee shall include with the plan documentation of consultation and copies of comments or recommendations on the completed plan after it has been prepared and provided to the agencies, and specific descriptions of how the agency comments are accommodated by the plan. The Licensee shall allow a minimum of 30 days for the agencies to comment and to make recommendations prior to filing the plan with the Commission. If the Licensee does not adopt a recommendation, the filing shall include the Licensee's reasons, based on project specific information.

The Commission reserves the right to require changes to the plan. Upon Commission approval, the Licensee shall implement the plan, including any changes required by the Commission.

Article 408. 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.

Article 409. The Licensee shall, in consultation with the Michigan Department of Natural Resources (Michigan DNR), develop a plan to monitor purple loosestrife (Lythrum salicaria) and European milfoil (Myriphlylum spictum) in project waters annually. The plan shall include, but is not limited to: (a) the method of monitoring, (b) the frequency of monitoring, and (c) documentation of transmission of monitoring data to the Michigan DNR. The plan shall be submitted to the Commission for approval within 6 months of the date of issuance of this license. If at any time during the period of the license, the Michigan DNR deems it necessary to control/eliminate purple loosestrife and/or European milfoil, the Licensee shall cooperate in this measure. The Commission reserves the right to require changes in the plan.

The Licensee shall include documentation of consultation with the Michigan DNR before preparing the plan, copies of the Michigan DNR comments and recommendations on the completed plan after it has been prepared and provided to the agencies, and specific descriptions of how the Michigan DNR comments were accommodated by the plan. The Licensee shall allow a minimum of 30 days for the Michigan DNR to comment and to make recommendations prior to filing the plan with the Commission. If the Licensee does not adopt a recommendation, the filing shall include the Licensee's reasons, based on project-specific information.

Article 410. The Licensee shall implement the measures listed below to protect the federally-listed threatened bald eagles' (Haliaeetus leucocephalus) potential nesting trees and roosting and feeding areas from human disturbance, as well as protecting the eagles' forage base.

a. To maintain and protect bald eagle perch trees, prohibit clearcutting of trees (diameter breast height of 12 inches or greater) within 200 feet of the reservoirs' shorelines, except to clear felled or damaged trees, which may affect public safety or project-related operations. In the event project operation and/or maintenance would involve any tree removal along the reservoirs' shorelines or stream sections within the project boundary, the Licensee shall contact the U. S. Fish and Wildlife Service (FWS) and the Michigan Department of Natural Resources (Michigan DNR) for approval, before removing any identified tree(s);

b. Upon determination by the FWS and Michigan DNR of consistently used bald eagle feeding area(s), the Licensee shall establish, in consultation with the FWS and Michigan DNR, human activity restriction zones around the identified area;

c. Meet annually with the FWS and Michigan DNR to identify

any new nest, or previously unknown and potential nesting, roosting, or feeding sites in the project area, which would be subject to protection; and

d. Should the Michigan DNR recommend a rough fish removal program which requires the Licensee's cooperation, the Licensee shall file, upon completion of consultation with the FWS and Michigan DNR, for Commission approval any plans to remove rough fish on reservoirs or stream sections within the project including any proposed changes in project operation. The Commission reserves the right to change the plan.

Article 411. Within 6 months from the date of issuance of this license, the Licensee shall file as-built drawings showing the seven phase 1 recreation facilities, as described in the revised recreation plan filed on December 11, 1992.

The Licensee shall file a report with the as-built drawings, which shall describe: (a) how the design of the facilities accommodates use by the disabled, (b) the scope of the sign program implemented for the public access areas, including signage from major roads, (c) a general plan for operation and maintenance of all the developed public use facilities, and (d) consultation with the Michigan Department of Natural Resources and the National Park Service on the phase 1 recreation facilities, copies of comments and recommendations on the report after it has been prepared and provided to the agencies, and specific descriptions of how the agencies' comments are accommodated in the report. The Licensee shall allow a minimum of 30 days for the agencies to comment before filing the report with the Commission. If the Licensee does not adopt a recommendation, the filing shall include the Licensee's reasons, based on project-specific information.

Within 18 months from the date of issuance of this license, the Licensee shall file as-built drawings showing the three phase 2 recreation facilities, as described in the revised recreation plan filed on December 11, 1992, together with a phase 2 report that includes the same type of descriptive information outlined above, (a) through (d), for the phase 1 report.

Article 412. The Licensee, before starting any land-clearing or land-disturbing actives within the project boundaries, other than those specifically authorized in this license, including recreation developments at the project, shall consult with the State Historic Preservation Officer (SHPO).

If the Licensee discovers previously unidentified archeological or historic properties during the course of constructing or developing project works or other facilities at the project, the Licensee shall stop all land-clearing and land-disturbing activities in the vicinity of the properties and

consult with the SHPO.

In either instance, the Licensee shall file for Commission approval a cultural resource management plan (plan) prepared by a qualified cultural resource specialist after having consulted with the SHPO. The plan shall include the following items: (1) a description of each discovered property indicating whether it is listed on or eligible to be listed on the National Register of Historic Places; (2) a description of the potential effect on each discovered property; (3) proposed measures for avoiding or mitigating effects; (4) documentation of the nature and extent of consultation; and (5) a schedule for mitigating effects and conducting additional studies. The Commission may require changes to the plan.

The Licensee shall not begin land-clearing or land-disturbing activities, other than those specifically authorized in this license, or resume such activities in the vicinity of a property, discovered during construction, until informed that the requirements of this article have been fulfilled.

Article 413. The Licensee shall, in accordance with the terms and provisions of section 6.0 of the "Settlement Agreement between Wolverine Power Supply Cooperative (Licensee) and the Michigan Department of Natural Resources (MDNR)," cooperate with the MDNR in identifying and repairing erosion sites caused by project operation.

The Licensee, in consultation with the MDNR, shall file annual status reports with the Commission, beginning 1 year after any license is issued for the Tower and Kleber Project, outlining the progress and activities engaged in by the Licensee in cooperating with the MDNR in identifying and repairing erosion sites caused by project operation. The annual status reports shall be filed with the Commission by October 1 of each year, and shall include a description of the progress and activities engaged in during the previous year and the expected progress and activities to be engaged in during the upcoming year.

Article 414. (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; (3) embankments, bulkheads, retaining walls, or similar structures for erosion control to protect the existing shoreline; and (4) food plots and other wildlife enhancement. 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 or roads where 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. If no conveyance was made during the prior calendar year, the Licensee shall so inform the Commission and the Regional Director in writing no later than January 31 of each year.

(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 (measured over project waters) 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 project waters at normal 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 60 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 the following covenants running with the land: (i) the use of the lands conveyed shall not endanger health, create a nuisance, or otherwise be incompatible with overall project recreational use; (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; and (iii) the grantee shall not unduly restrict public access to project waters.

(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 constitutes final agency action. Requests for rehearing by the Commission may be filed within 30 days of the date of issuance of this order, pursuant to 18 C.F.R. □385.713. Filing a request for rehearing does not operate as a stay of the license unless specifically ordered by the Commission. The Licensee's failure to file a request for rehearing shall constitute acceptance of the order.

Fred E. Springer
Director, Office of
Hydropower Licensing

Form L-3
(October, 1975)

FEDERAL ENERGY REGULATORY COMMISSION

TERMS AND CONDITIONS OF LICENSE FOR CONSTRUCTED MAJOR PROJECT AFFECTING NAVIGABLE WATERS OF THE UNITED STATES

Article 1. The entire project, as described in this order of the Commission, shall be subject to all of the provisions, terms, and conditions of the license.

Article 2. No substantial change shall be made in the maps, plans, specifications, and statements described and designated as exhibits and approved by the Commission in its order as a part of the license until such change shall have been approved by the Commission: Provided, however, That if the Licensee or the Commission deems it necessary or desirable that said approved exhibits, or any of them, be changed, there shall be submitted to the Commission for approval a revised, or additional exhibit or exhibits covering the proposed changes which, upon approval by the Commission, shall become a part of the license and shall supersede, in whole or in part, such exhibit or exhibits theretofore made a part of the license as may be specified by the Commission.

Article 3. The project area and project works shall be in substantial conformity with the approved exhibits referred to in Article 2 herein or as changed in accordance with the provisions of said article. Except when emergency shall require for the protection of navigation, life, health, or property, there shall not be made without prior approval of the Commission any substantial alteration or addition not in conformity with the approved plans to any dam or other project works under the license or any substantial use of project lands and waters not authorized herein; and any emergency alteration, addition, or use so made shall thereafter be subject to such modification and change as the Commission may direct. Minor changes in project works, or in uses of project lands and waters, or divergence from such approved exhibits may be made if such changes will not result in a decrease in efficiency, in a material increase in cost, in an adverse environmental impact, or in impairment of the general scheme of development; but any of such minor changes made without the prior approval of the Commission, which in its judgment have produced or will produce any of such results, shall be subject to such alteration as the Commission may direct.

Article 4. The project, including its operation and maintenance and any work incidental to additions or alterations authorized by the Commission, whether or not conducted upon lands

of the United States, shall be subject to the inspection and supervision of the Regional Engineer, Federal Energy Regulatory Commission, in the region wherein the project is located, or of such other officer or agent as the Commission may designate, who shall be the authorized representative of the Commission for such purposes. The Licensee shall cooperate fully with said representative and shall furnish him such information as he may require concerning the operation and maintenance of the project, and any such alterations thereto, and shall notify him of the date upon which work with respect to any alteration will begin, as far in advance thereof as said representative may reasonably specify, and shall notify him promptly in writing of any suspension of work for a period of more than one week, and of its resumption and completion. The Licensee shall submit to said representative a detailed program of inspection by the Licensee that will provide for an adequate and qualified inspection force for construction of any such alterations to the project. Construction of said alterations or any feature thereof shall not be initiated until the program of inspection for the alterations or any feature thereof has been approved by said representative. The Licensee shall allow said representative and other officers or employees of the United States, showing proper credentials, free and unrestricted access to, through, and across the project lands and project works in the performance of their official duties. The Licensee shall comply with such rules and regulations of general or special applicability as the Commission may prescribe from time to time for the protection of life, health, or property.

Article 5. The Licensee, within five years from the date of issuance of the license, shall acquire title in fee or the right to use in perpetuity all lands, other than lands of the United States, necessary or appropriate for the construction maintenance, and operation of the project. The Licensee or its successors and assigns shall, during the period of the license, retain the possession of all project property covered by the license as issued or as later amended, including the project area, the project works, and all franchises, easements, water rights, and rights or occupancy and use; and none of such properties shall be voluntarily sold, leased, transferred, abandoned, or otherwise disposed of without the prior written approval of the Commission, except that the Licensee may lease or otherwise dispose of interests in project lands or property without specific written approval of the Commission pursuant to the then current regulations of the Commission. The provisions of this article are not intended to prevent the abandonment or the retirement from service of structures, equipment, or other project works in connection with replacements thereof when they become obsolete, inadequate, or inefficient for further service due to wear and tear; and mortgage or trust deeds or judicial sales made thereunder, or tax sales, shall not be deemed voluntary transfers within the meaning of this article.

Article 6. In the event the project is taken over by the

United States upon the termination of the license as provided in Section 14 of the Federal Power Act, or is transferred to a new licensee or to a non-power licensee under the provisions of Section 15 of said Act, the Licensee, its successors and assigns shall be responsible for, and shall make good any defect of title to, or of right of occupancy and use in, any of such project property that is necessary or appropriate or valuable and serviceable in the maintenance and operation of the project, and shall pay and discharge, or shall assume responsibility for payment and discharge of, all liens or encumbrances upon the project or project property created by the Licensee or created or incurred after the issuance of the license: Provided, That the provisions of this article are not intended to require the Licensee, for the purpose of transferring the project to the United States or to a new licensee, to acquire any different title to, or right of occupancy and use in, any of such project property than was necessary to acquire for its own purposes as the Licensee.

Article 7. The actual legitimate original cost of the project, and of any addition thereto or betterment thereof, shall be determined by the Commission in accordance with the Federal Power Act and the Commission's Rules and Regulations thereunder.

Article 8. The Licensee shall install and thereafter maintain gages and stream-gaging stations for the purpose of determining the stage and flow of the stream or streams on which the project is located, the amount of water held in and withdrawn from storage, and the effective head on the turbines; shall provide for the required reading of such gages and for the adequate rating of such stations; and shall install and maintain standard meters adequate for the determination of the amount of electric energy generated by the project works. The number, character, and location of gages, meters, or other measuring devices, and the method of operation thereof, shall at all times be satisfactory to the Commission or its authorized representative. The Commission reserves the right, after notice and opportunity for hearing, to require such alterations in the number, character, and location of gages, meters, or other measuring devices, and the method of operation thereof, as are necessary to secure adequate determinations. The installation of gages, the rating of said stream or streams, and the determination of the flow thereof, shall be under the supervision of, or in cooperation with, the District Engineer of the United States Geological Survey having charge of stream-gaging operations in the region of the project, and the Licensee shall advance to the United States Geological Survey the amount of funds estimated to be necessary for such supervision, or cooperation for such periods as may mutually agreed upon. The Licensee shall keep accurate and sufficient records of the foregoing determinations to the satisfaction of the Commission, and shall make return of such records annually at such time and in such form as the Commission may prescribe.

Article 9. The Licensee shall, after notice and opportunity for hearing, install additional capacity or make other changes in the project as directed by the Commission, to the extent that it is economically sound and in the public interest to do so.

Article 10. The Licensee shall, after notice and opportunity for hearing, coordinate the operation of the project, electrically and hydraulically, with such other projects or power systems and in such manner as the Commission any direct in the interest of power and other beneficial public uses of water resources, and on such conditions concerning the equitable sharing of benefits by the Licensee as the Commission may order.

Article 11. Whenever the Licensee is directly benefited by the construction work of another licensee, a permittee, or the United States on a storage reservoir or other headwater improvement, the Licensee shall reimburse the owner of the headwater improvement for such part of the annual charges for interest, maintenance, and depreciation thereof as the Commission shall determine to be equitable, and shall pay to the United States the cost of making such determination as fixed by the Commission. For benefits provided by a storage reservoir or other headwater improvement of the United States, the Licensee shall pay to the Commission the amounts for which it is billed from time to time for such headwater benefits and for the cost of making the determinations pursuant to the then current regulations of the Commission under the Federal Power Act.

Article 12. The United States specifically retains and safeguards the right to use water in such amount, to be determined by the Secretary of the Army, as may be necessary for the purposes of navigation on the navigable waterway affected; and the operations of the Licensee, so far as they affect the use, storage and discharge from storage of waters affected by the license, shall at all times be controlled by such reasonable rules and regulations as the Secretary of the Army may prescribe in the interest of navigation, and as the Commission may prescribe for the protection of life, health, and property, and in the interest of the fullest practicable conservation and utilization of such waters for power purposes and for other beneficial public uses, including recreational purposes, and the Licensee shall release water from the project reservoir at such rate in cubic feet per second, or such volume in acre-feet per specified period of time, as the Secretary of the Army may prescribe in the interest of navigation, or as the Commission may prescribe for the other purposes hereinbefore mentioned.

Article 13. On the application of any person, association, corporation, Federal agency, State or municipality, the Licensee shall permit such reasonable use of its reservoir or other project properties, including works, lands and water rights, or parts thereof, as may be ordered by the Commission, after notice and opportunity for hearing, in the interests of comprehensive development of the waterway or waterways involved and the

conservation and utilization of the water resources of the region for water supply or for the purposes of steam-electric, irrigation, industrial, municipal or similar uses. The Licensee shall receive reasonable compensation for use of its reservoir or other project properties or parts thereof for such purposes, to include at least full reimbursement for any damages or expenses which the joint use causes the Licensee to incur. Any such compensation shall be fixed by the Commission either by approval of an agreement between the Licensee and the party or parties benefiting or after notice and opportunity for hearing. Applications shall contain information in sufficient detail to afford a full understanding of the proposed use, including satisfactory evidence that the applicant possesses necessary water rights pursuant to applicable State law, or a showing of cause why such evidence cannot concurrently be submitted, and a statement as to the relationship of the proposed use to any State or municipal plans or orders which may have been adopted with respect to the use of such waters.

Article 14. In the construction or maintenance of the project works, the Licensee shall place and maintain suitable structures and devices to reduce to a reasonable degree the liability of contact between its transmission lines and telegraph, telephone and other signal wires or power transmission lines constructed prior to its transmission lines and not owned by the Licensee, and shall also place and maintain suitable structures and devices to reduce to a reasonable degree the liability of any structures or wires falling or obstructing traffic or endangering life. None of the provisions of this article are intended to relieve the Licensee from any responsibility or requirement which may be imposed by any other lawful authority for avoiding or eliminating inductive interference.

Article 15. The Licensee shall, for the conservation and development of fish and wildlife resources, construct, maintain, and operate, or arrange for the construction, maintenance, and operation of such reasonable facilities, and comply with such reasonable modifications of the project structures and operation, as may be ordered by the Commission upon its own motion or upon the recommendation of the Secretary of the Interior or the fish and wildlife agency or agencies of any State in which the project or a part thereof is located, after notice and opportunity for hearing.

Article 16. Whenever the United States shall desire, in connection with the project, to construct fish and wildlife facilities or to improve the existing fish and wildlife facilities at its own expense, the Licensee shall permit the United States or its designated agency to use, free of cost, such of the Licensee's lands and interests in lands, reservoirs, waterways and project works as may be reasonably required to complete such facilities or such improvements thereof. In addition, after notice and opportunity for hearing, the Licensee shall modify the project operation as may be reasonably prescribed by the Commis-

sion in order to permit the maintenance and operation of the fish and wildlife facilities constructed or improved by the United States under the provisions of this article. This article shall not be interpreted to place any obligation on the United States to construct or improve fish and wildlife facilities or to relieve the Licensee of any obligation under this license.

Article 17. The Licensee shall construct, maintain, and operate, or shall arrange for the construction, maintenance, and operation of such reasonable recreational facilities, including modifications thereto, such as access roads, wharves, launching ramps, beaches, picnic and camping areas, sanitary facilities, and utilities, giving consideration to the needs of the physically handicapped, and shall comply with such reasonable modifications of the project, as may be prescribed hereafter by the Commission during the term of this license upon its own motion or upon the recommendation of the Secretary of the Interior or other interested Federal or State agencies, after notice and opportunity for hearing.

Article 18. So far as is consistent with proper operation of the project, the Licensee shall allow the public free access, to a reasonable extent, to project waters and adjacent project lands owned by the Licensee for the purpose of full public utilization of such lands and waters for navigation and for outdoor recreational purposes, including fishing and hunting: Provided, That the Licensee may reserve from public access such portions of the project waters, adjacent lands, and project facilities as may be necessary for the protection of life, health, and property.

Article 19. In the construction, maintenance, or operation of the project, the Licensee shall be responsible for, and shall take reasonable measures to prevent, soil erosion on lands adjacent to streams or other waters, stream sedimentation, and any form of water or air pollution. The Commission, upon request or upon its own motion, may order the Licensee to take such measures as the Commission finds to be necessary for these purposes, after notice and opportunity for hearing.

Article 20. The Licensee shall clear and keep clear to an adequate width 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 results from the clearing of lands or from the maintenance 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 the lands and disposal of the unnecessary material shall be done with due diligence and to the satisfaction of the authorized representative of the Commission and in accordance with appropriate Federal, State, and local statutes and regulations.

Article 21. Material may be dredged or excavated from, or

placed as fill in, project lands and/or waters only in the prosecution of work specifically authorized under the license; in the maintenance of the project; or after obtaining Commission approval, as appropriate. Any such material shall be removed and/or deposited in such manner as to reasonably preserve the environmental values of the project and so as not to interfere with traffic on land or water. Dredging and filling in a navigable water of the United States shall also be done to the satisfaction of the District Engineer, Department of the Army, in charge of the locality.

Article 22. Whenever the United States shall desire to construct, complete, or improve navigation facilities in connection with the project, the Licensee shall convey to the United States, free of cost, such of its lands and rights-of-way and such rights of passage through its dams or other structures, and shall permit such control of its pools, as may be required to complete and maintain such navigation facilities.

Article 23. The operation of any navigation facilities which may be constructed as a part of, or in connection with, any dam or diversion structure constituting a part of the project works shall at all times be controlled by such reasonable rules and regulations in the interest of navigation, including control of the level of the pool caused by such dam or diversion structure, as may be made from time to time by the Secretary of the Army.

Article 24. The Licensee shall furnish power free of cost to the United States for the operation and maintenance of navigation facilities in the vicinity of the project at the voltage and frequency required by such facilities and at a point adjacent thereto, whether said facilities are constructed by the Licensee or by the United States.

Article 25. The Licensee shall construct, maintain, and operate at its own expense such lights and other signals for the protection of navigation as may be directed by the Secretary of the Department in which the Coast Guard is operating.

Article 26. If the Licensee shall cause or suffer essential project property to be removed or destroyed or to become unfit for use, without adequate replacement, or shall abandon or discontinue good faith operation of the project or refuse or neglect to comply with the terms of the license and the lawful orders of the Commission mailed to the record address of the Licensee or its agent, the Commission will deem it to be the intent of the Licensee to surrender the license. The Commission, after notice and opportunity for hearing, may require the Licensee to remove any or all structures, equipment and power lines within the project boundary and to take any such other action necessary to restore the project waters, lands, and facilities remaining within the project boundary to a condition satisfactory to the United States agency having jurisdiction over its lands or the

Commission's authorized representative, as appropriate, or to provide for the continued operation and maintenance of nonpower facilities and fulfill such other obligations under the license as the Commission may prescribe. In addition, the Commission in its discretion, after notice and opportunity for hearing, may also agree to the surrender of the license when the Commission, for the reasons recited herein, deems it to be the intent of the Licensee to surrender the license.

Article 27. The right of the Licensee and of its successors and assigns to use or occupy waters over which the United States has jurisdiction, or lands of the United States under the license, for the purpose of maintaining the project works or otherwise, shall absolutely cease at the end of the license period, unless the Licensee has obtained a new license pursuant to the then existing laws and regulations, or an annual license under the terms and conditions of this license.

Article 28. The terms and conditions expressly set forth in the license shall not be construed as impairing any terms and conditions of the Federal Power Act which are not expressly set forth herein.

ENVIRONMENTAL ASSESSMENT
FOR HYDROPOWER LICENSE

Tower and Kleber Hydroelectric Project

FERC Project No. 10615-001

Michigan

Federal Energy Regulatory Commission
Office of Hydropower Licensing
Division of Project Review
825 N. Capitol Street, NE
Washington, D.C. 20426

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SUMMARY

On February 21, 1989, The Wolverine Power Supply Cooperative, Inc., (Wolverine) filed an application for a license for the existing unlicensed Tower and Kleber Hydroelectric Project, located on the Black River in Forest and Waverly Townships, Michigan. The project would continue to generate about 1.7 megawatts (MW) per year, which would continue to be sold to seven of Wolverine's nearby wholesale cooperative customers.

The environmental assessment (EA) prepared for the Tower and Kleber Project analyzes the effects associated with the issuance of a license for the developments, and recommends terms and conditions to become a part of any license issued. For any license issued, the Federal Energy Regulatory Commission (Commission) must determine that the project adopted will be best adapted to a comprehensive plan for improving or developing a waterway. In addition to the power and development purposes for which licenses are issued, the Commission must give equal consideration to the purpose of energy conservation, the protection, mitigation of damages to, and enhancement of fish and wildlife, protection of recreational opportunities, and the preservation of other aspects of environmental quality. The EA for the Tower and Kleber Project reflects the Commission's consideration of these factors.

After carefully considering all these resources, and benefits, we recommend that 9 measures be included in any license issued for the Tower and Kleber Project. These measures are: (1) operate project in a run-of-river mode; (2) pass a streamflow equal to inflow into the project during emergency shutdowns; (3) implement a water quality monitoring plan; (4) limit winter (November 1 to March 31) drawdown to no more than 1 foot; (5) cooperate with the Michigan Department of Natural Resources (DNR) to develop a formal lake sturgeon management plan; (6) implement a turbine and entrainment protection and mitigation plan; (7) implement a plan to control/eliminate nuisance flora when deemed appropriate; (8) implement bald eagle protection measures; and (9) protect any previously undiscovered properties that may be eligible for listing on the National Register of Historic Places.

Overall, these mitigation measures would protect or enhance fish and wildlife resources, water quality, and recreational resources in both the Tower and Kleber Project ponds and the Black River, protect the federally-listed bald eagle (Haliaeetus leucocephalus) and protect any previously undiscovered properties that may be eligible for listing on the National Register of Historic Places. In addition, the electricity generated from the project would be beneficial because it would continue to reduce the use of fossil-fueled, electric generating plants, conserve nonrenewable energy resources, and reduce atmospheric pollution.

No reasonable action alternatives to the project have been identified for assessment. The no action alternative, denial of a license, has been considered and is addressed in the EA and the Comprehensive Development sections of the EA. Denial of the license would mean that all of the power that would have been generated by the Tower and Kleber Project would be generated by alternative resources (probably fossil-fueled generating plants), which would release various amounts of pollutants into the atmosphere. Furthermore, no measures would be implemented to protect, mitigate adverse impacts to, or enhance existing environmental resources.

On November 11, 1987, pursuant to Section 401 of the Clean Water Act, Wolverine requested that the DNR issue a water quality certificate for the Tower and Kleber Project. By letter dated July 21, 1988, Wolverine received the water quality certification (Thomas R. Doyle, FERC Coordinator, Fisheries Division, Michigan Department of Natural Resources, Lansing, Michigan).

Pursuant to Section 10(j) of the Act, we make a determination that all of the U. S. Department of Interior's (Interior) recommendations are consistent with the purposes and requirements of Part I of the Act and applicable law. 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 of, mitigation of adverse impacts to, and enhancement of fish and wildlife resources. We have addressed the concerns of the Interior and have made recommendations consistent with Interior.

Pursuant to Section 10(j) of the Act, we are making a

preliminary determination that certain recommendations of the Michigan state fish and wildlife agency are inconsistent with the purpose and requirements of Sections 4(e) and 10(a) of the Act. Michigan Department of Natural Resources' (DNR) recommendations conflict with the comprehensive planning and public interest standards of the Act. These are DNR's recommendations: (1) requiring Wolverine to develop and implement an upstream fish passage plan, (2) requiring Wolverine to develop and implement a turbine mortality and entrainment plan, and (3) requiring Wolverine to develop and implement a management plan for lake sturgeon as well as other threatened, endangered, and sensitive species.

On the basis of staff's 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.

ENVIRONMENTAL ASSESSMENT

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

Tower and Kleber Hydroelectric Project
FERC Project No. 10615-001
March 31, 1993

I. APPLICATION

On February 21, 1989, the Wolverine Power Supply Cooperative, Inc. (Wolverine), filed an application for a license for the existing unlicensed Tower and Kleber Hydroelectric Project, a major project of 1,760-kilowatts (kW). On June 22, 1989, November 20, 1989, and December 11, 1992, Wolverine supplemented its application.

The project sites are located on the Black River in Cheboygan County, Michigan. Tower Dam is in the town of Tower. Both dams are located in Cheboygan County, Michigan. As of January 6, 1993, the only other hydropower development on the Black River is the Alverno Dam. Alverno is a retired project located downstream of Black Lake. The project would not occupy any United States lands.

II. PURPOSE AND NEED FOR ACTION

A. Purpose

The Tower and Kleber project generates an estimated 7,498,500 kilowatthours (kWh) of electric energy per year which is sold to seven of Wolverine's nearby wholesale cooperative customers.

B. Need for Power

Wolverine is a Michigan non-profit cooperative corporation. The existing project complex consists of two dams and two hydroelectric power plants - the Tower Dam and power plant and the Kleber Dam and power plant. The Tower Hydroelectric Plant was constructed in 1917 and its operation records are available for 1918 and subsequent years. The Kleber Hydroelectric Plant was built during years 1948 to 1949 and operating records are available for 1949 and subsequent years.

Two facts establish the need for electric power equivalent to the net output of the Tower and Kleber facilities and also establish the need for the project complex. First, the output of the two facilities--operating without a Federal license--has been used by service-area end-use customers for more than forty years. Second, the applicant purchases about seventy percent of the electric energy it sells to its nearby wholesale cooperative

customers. This supplementary energy is supplied principally by the Detroit Edison Company and by Consumers Power Company.

Denial of license would force the applicant to increase its purchases from Detroit Edison or Consumers Power.

Furthermore, continued operation of the Tower and Kleber hydropower facilities is in the best interest of the public. Hydropower generation produces no atmospheric pollutants and consumes no non-renewable primary energy resources--such as fossil fuels.

The Tower and Kleber hydropower facilities have a combined energy net output of about 7.5 gigawatt-hours per year. The energy which the applicant purchases from Detroit Edison Company and Consumers Power Company is generated principally by coal-fired steam-electric plants.

Using a heat rate of 10,659 Btu per kilowatt-hour and assuming that the heat content of the pulverized bituminous coal is 25.4 million Btu per short ton, the generation of one net gigawatt-hour of electric energy requires the combustion of 419.65 tons of coal.

Thus one year of operation of the Tower and Kleber hydropower facilities would make the consumption of approximately 3,147 tons of coal unnecessary.

In view of public concerns about acid rain, global warming, and the uncertain costs to electric utilities of complying with the new Clear Air Act, we believe that in all instances where economic, financial, and environmental considerations permit, it is in the public's best interest to develop hydroelectric power whenever possible.

III. PROPOSED PROJECT AND ALTERNATIVES

A. Proposed Project

1. Project description: Tower Hydroelectric Plant was initially owned and operated by Onaway Light and Power Company of Onaway, Michigan. The entire facility was acquired in 1941 by Presque Isle Electric Cooperative, Inc. and operated until it was acquired by Northern Michigan Electric Cooperative, Inc. (Northern) on December 5, 1950. All assets of Northern were transferred to Wolverine Power Supply Cooperative, Inc. when Northern and Wolverine Electric Cooperative merged to form Wolverine Power Supply Cooperative, Inc.

The existing constructed project consists of two hydroelectric developments (Figure 2 and 3):

A. The constructed Tower Hydroelectric Project which consists of: (1) the 727-foot-long and 22-foot-high Tower Dam; (2) a 110-foot-long gated spillway; (3) an intake structure integral with the powerhouse equipped with 4 vertical slide headgates; (4) a brick reinforced concrete powerhouse integral with the dam and housing 2 280-kW generating units with a total installed capacity of 560 kW; (5) a non-operational sluiceway; (6) a 102-acre reservoir having a maximum storage capacity of 620 acre-feet at 722.1 feet m.s.l.; (7) a 150-foot-long, 69-kV transmission line; and (8) appurtenant facilities;

B. The constructed Kleber Hydropower Project which consists of: (1) the 535-foot-long and 40-foot-high Kleber Dam; (2) a 12-foot-long ogee-type spillway controlled by a Taintor gate and a 200-foot-long uncontrolled emergency spillway; (3) an intake structure equipped with 2 vertical lift gates; (4) a reinforced concrete powerhouse 42-foot-long by 40-foot wide by 54-foot-high and housing 2 600-kW generating units with a total installed capacity of 1,200 kW; (5) two 84-inch-diameter and 139-foot-long steel penstocks; (6) a 295-acre reservoir having a maximum storage capacity of 3,000 acre-feet at 701.1 feet m.s.l.; (7) a 4-mile long, 12.5 kV transmission line connecting the Kleber generator plant bus to the Presque Isle distribution load tap; and (8) appurtenant facilities.

2. Proposed Environmental Measures

a. Construction. In order to enhance public recreational use at the project, Wolverine formulated a phased plan in consultation with the Michigan Department of Natural Resources (DNR) to improve public access, including improved boat launching ramps, access roads, parking areas, footpaths, toilet facilities, and signs. The initial phase of development (phase 1), requiring improvements at seven locations, has been completed. Additional improvements (phase 2) would be completed at three more locations before January 1995.

b. Operation. Wolverine proposes: (1) to continue operating the project in a run-of-river mode, and to provide for the maintenance and operation of headwater and tailwater gages to verify run-of-river operation; (2) to maintain pond levels at 722.1 feet (Tower pond) and 701.1 feet (Kleber pond); (3) a winter (November 1 to March 31) drawdown of 1 foot; (4) to automate the project within 3 years of license issuance to help ensure maintenance of pond levels; (5) to monitor dissolved oxygen (DO) and water temperature at the project site and to develop a water quality protection plan to maintain water quality in the Black River; (6) to develop and implement a downstream fish protection and mitigation plan; and (7) to install downstream fish passage facilities at such time as they are deemed necessary.

Wolverine proposes to (1) record any observations of eagles made incidental to normal work activities, and (2) consult with the U.S. Fish and Wildlife Service (FWS) in the event that one or more mature trees, > 12-inch-dbh9/, must be removed along the ponds or stream sections during normal facility maintenance. Wolverine further proposes to provide nesting boxes for ducks and other waterfowl; maintain a sandy area for turtles; and provide an osprey platform.

Wolverine proposes to maintain all the recreational access facilities developed in accordance with its recreation plan. Winter maintenance would include reasonable snow removal at the boat launches to maintain accessibility.

B. Alternatives to the Proposed Project Including the No Action Alternative

1. Alternative Project Operations: Alternative modes of operation of the project considered include the proposed mode and the current mode of operation. Currently, Wolverine operates the project run-of-river. Proposed project operation is discussed in section V.B.2, V.B.3, V.B.4, and V.B.5 of this report.

2. Alternative of No Action: The no-action alternative is continued operation of the Tower and Kleber Project and maintenance of the environmental status quo. There would be no changes to the existing environmental setting or to the current mode of project operation.

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 notifies the agencies that the application is ready for environmental analysis 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.

9/ dbh = diameter breast height - measured about 4.5 feet above the ground.

The following entities commented on the application by the December 12, 1992 deadline specified in our notice that the application is ready for environmental analysis.

Commenting agencies and other entities	Date of letter
U.S. Department of Interior	12/07/92
Michigan Department of Natural Resources	12/04/92
Michigan Hydro Relicensing Coalition	12/04/92

The applicant responded to the agency comments by letter dated January 19, 1993.

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, but were not in opposition to the licensing of the project.

Interveners	Date of motion
State of Michigan	07/08/92
Michigan Hydro Relicensing Coalition	07/08/92

The applicant did respond to the intervention by the Michigan Hydro Relicensing Coalition by letter dated January 19, 1993.

B. Water Quality Certification

On November 11, 1987, Wolverine requested that the Michigan Department of Natural Resources (DNR) issue a Section 401 water quality certificate (WQC) for the Tower and Kleber Project. Wolverine received Section 401 water quality certification, as required by the Clean Water Act, from the DNR on July 21, 1988 (Thomas R. Doyle, FERC Coordinator, Fisheries Division, Michigan Department of Natural Resources, Lansing, Michigan, July 21, 1988). In the certification, the DNR required the following:

(1) The licensee operate the Tower and Kleber Project in an instantaneous run-of-river mode at all times, except for events completely beyond the control of the licensee. Should an event, as indicated above, occur that would not provide run-of-river, the licensee shall make all practical efforts to assure a release from the pond, immediately contact the DNR FERC Coordinator, and within 24 hours initiate notification by mail providing all pertinent information to the DNR-Fisheries Division;

(2) Upon the occurrence of a water quality emergency in the reservoir or downstream being made known to the licensee, the licensee shall immediately contact the DNR through the Pollution Emergency Alerting System (PEAS), and with all practicable speed, arrange for any modifications of pond operation or discharge as will relieve the emergency; and

(3) In order that the licensee can assure run-of-river releases, it is necessary that inflow and outflow to the pond be gauged and recorded. Such records shall be made available to DNR and/or FWS as needed.

V. ENVIRONMENTAL ANALYSIS

A. General Description of the Locale

1. Black River Basin. The Black River watershed includes parts of Presque Isle and Cheboygan Counties. The Black River enters Lake Huron's South Channel near the Town of Cheboygan. Black Lake occupies a depression scoured out by glacial erosion. The drainage area for Tower and Kleber Dams are essentially the same, slightly over 300 square miles (Figure 1).

Lands around Tower and Kleber ponds are used for hydroelectric generation facilities as well as facilities associated with diesel generators. There are many long time residential properties in the vicinity of both plants.

2. Proposed and Existing Hydropower Development.

The only other hydropower development along the Black River is the retired 1,300 kW Alverno hydropower plant downstream from the Kleber hydropower plant.

3. Cumulative Impacts On Target Resources. We have identified fisheries and water quality as target resources. A target resource is an important resource that may be cumulatively affected by multiple development within the river basin. We based our selection of target resources on the regional significance and geographical distribution of the resource within the river basin. Cumulative beneficial impacts to target resources from our recommended mitigation measures at the Tower and Kleber Project are discussed in section V.B.

The DNR, Fisheries Division, has been working with a population of lake sturgeon, in Black Lake and Upper Black River since the early 1920's to maintain this run of fish. In 1973, DNR constructed four spawning reefs in the upper Black River between Kleber Dam and Black Lake. Historically, Wolverine has maintained a minimum at all times of 80 cfs downstream of its Kleber Dam during the May and June sturgeon spawning season to assure a steady flow of water over these reefs as well as over

existing natural spawning habitat. Studies preformed by DNR indicate that maintenance of minimum spawning flows has been successful in maintaining this population of fish.

Brook trout, northern pike, smallmouth bass, and a variety of sunfishes are recreationally-important species that reside in the Tower and Kleber ponds.

We identified fisheries because of its importance for recreational fishing (coldwater salmonid fishery) and because Black Lake and the upper Black River support a significant population of lake sturgeon, which has been the target of management by the DNR.

The Tower and Kleber Project has operated for many years without causing significant water quality impacts.

Water quality is identified as a target resource because of potential adverse effects that may be caused by alteration of DO concentrations and temperature in the river. Potential effects concerning water quality are discussed in section V.B.2.a.

B. Proposed Project We have reviewed the proposed project in relation to the environmental resources in the project impact area and have concluded that there would be no relevant or material unavoidable adverse impacts to any of the resource areas. Furthermore, there would be neither a beneficial nor adverse impact on visual resources and socioeconomics.

The proposed project would have no effect on visual resources because there would be no construction or major change in operations. The only change in operations would be limiting the winter (November 31 to March 1) pond drawdown to no more than 1 foot. This would not have any effect on the aesthetic experience because during the winter months, the pond is shrouded in ice, and the drawdown is not visible to the naked eye. Therefore, no change in the visual aspects of the projects would occur.

The socioeconomics of the area will not be effected either adversely or beneficially because with no new construction and the automation of the Tower and Kleber Projects, there will be no influx of new workers.

1. Geological Resources

Affected Environment: The project is located in the northern portion of the Michigan High Plains. The predominant deposits in the area are glacial moraines, outwash sands and gravel, and till. Bedrock at the project is limestone. There are no reported shoreline erosion problems at the project.

Environmental impacts and recommendations: There is no new proposed project construction. There would be no adverse impacts to geological and soils resources. Instead, the proposed run-of-river operation would minimize pond fluctuations, and thus have a beneficial effect by further reducing the potential for future shoreline erosion.

The DNR says past and present project operation have caused some additional erosion in the project area that needs to be addressed. The DNR is concerned about possible resultant negative effects on fish productivity from additional sand bedload in the river and from sedimentation in the ponds. Consequently, the DNR recommends that Wolverine develop a plan to inventory, control, and repair present and future erosion sites on project lands and below the project in the project influence zone.

The Michigan Hydro Coalition (the Coalition) is concerned dam construction activities and peaking operations of any hydroelectric plant could cause riverbed scouring and shoreline erosion. Therefore, to guard against habitat degradation, the Coalition recommends that Wolverine develop provisions for simulating natural conditions and restoring degraded habitat caused by the project.

Wolverine doesn't agree with DNR's recommendation to develop and implement a plan to inventory, control, and repair present and future erosion sites or the Coalition's recommendation. Wolverine reports it met with the DNR on January 15, 1993, to discuss the DNR's recommendations. Wolverine further states the DNR has said it has no knowledge of any shoreline erosion problems in the ponds or in the area of the dams.

There is no new project-related construction and, as noted above, there are no reported shoreline erosion problems at the project. Operating the Tower and Kleber Project in a run-of-river mode would minimize fluctuations of the ponds' surface elevations and reduce the potential for erosion of the ponds' shorelines. As a result, the proposed run-of-river operation would have a beneficial effect by further reducing the potential for future shoreline erosion.

Therefore, we conclude that neither the DNR's recommendation nor the Coalition's concerns are warranted because (1) there is no evidence of shoreline erosion, (2) run-of-river operation would help to limit any future erosion problems, and (3) there would be no project related construction. For further discussion, refer to the water resource and terrestrial resource sections herein.

2. Water Resources

Affected Environment:

a. Streamflow:

	cfs 10/	Flow parameter
low flow:	162 cfs	exceeded 90 percent of the time
high flow:	423 cfs	exceeded 10 percent of the time
average flow:	274 cfs	average annual

Flow parameters for the Tower and Kleber Project are from U.S. Geological Survey (USGS) records for stream gauging station No. 04130500 located on the Black River, approximately 400 feet downstream of the Kleber Dam and about 2.7 miles downstream from Tower Dam. Data were obtained from this station for a 44-year period of record, from 1943 to 1986. The drainage area at the USGS gauging station is 313 square miles, while the drainage area at Tower Dam is 302 square miles. The minimum and maximum historical discharges are 4 cfs and 2,340 cfs, respectively. The minimum and maximum annual average discharges are 189 cfs and 350 cfs, respectively.

b. Water quality: The Black River, in the vicinity of the Tower and Kleber Project, supports a quality coolwater/coldwater fishery. Water quality standards are designated by the DNR according to the following numerical criteria: (1) total dissolved solids [500 milligrams per liter (mg/l) monthly average, 750 mg/l maximum]; (2) chlorides (50 mg/l monthly average); (3) pH (6.5 to 9.0 standard units); (4) phosphorus (1.0 mg/l monthly average); (5) fecal coliform (200 organisms per 100 milliliters); (6) dissolved oxygen (7.0 mg/l minimum); (7) temperature [heat load causing rise in temperature no more than 2 degrees Fahrenheit (èF) for receiving waters at the edge of the mixing zone and monthly maximum temperatures]; and (8) a variety of toxicants (generally following Environmental Protection Agency guidelines).

Data collected by Wolverine in July 1987 indicated that the Tower Pond did not stratify near the dam, but that the Kleber Pond did stratify in the deeper portion of the pond close to the dam. Temperature throughout Tower Pond varied little, from 24 to 26 degrees celsius (èC), while dissolved oxygen (DO) exceeded 6.2 mg/l at the dam. Temperature in the upper portion (about 10 to 13 feet) of Kleber Pond was relatively constant, from 25 to 27èC, but decreased significantly as depth increased beyond 13 feet. Oxygen levels showed similar stratification, with levels of at

10/ cubic feet per second

least 5 mg/l in the top 15 feet, and declining to minimal levels beyond 21 feet. However, little of Kleber Pond is deeper than 15 feet.

Data from the stream survey also indicated that the Tower and Kleber ponds have a minor effect on downstream temperatures and DO levels. During July, DO was found to decline in Tower Pond, but increase again downstream from Kleber Pond. In August, water temperature downstream of the Kleber Dam was 1èC higher than the temperature of water flowing into Tower Pond.

Currently, Tower Pond receives cooling water discharge from the Tower Diesel Plant. Although the baseline water quality study did not specifically address impacts of this discharge, data do indicate that the effect of cooling water discharges is negligible. In a "worst-case scenario" of a 41.7èC discharge when water temperature in Tower Pond was 30èC, temperature increase downstream of Tower Dam would be less than 0.2èC.

Environmental impacts and recommendations:

a. Dissolved oxygen and temperature: The DNR recommends Wolverine maintain the following state standards for DO concentration and temperature when river discharges are greater than or equal to the 95% exceedence flow:

(1) DO concentrations in the project tailwaters not less than 7 mg/l at any time unless Wolverine demonstrates to the Michigan Water Resources Commission (WRC) that these DO limits are not attainable through further feasible and prudent measures or the variation between the daily average and daily minimum DO concentrations in the river exceeds 1 mg/l. Further, if the WRC agrees with Wolverine's demonstration, DO concentrations in project tailwaters shall not be less than 6 mg/l at any time during the warm weather season (June through September) until such time as the WRC causes the preparation and implementation of a comprehensive plan as described in the State of Michigan water quality standards to upgrade these waters to 7 mg/l at any time;

(2) temperature in the project tailwaters no greater than a monthly average of 2èF higher than the temperature as measured upstream of the project; and

(3) monthly average temperatures in waters downstream of the project no greater than:

January, February --	38èF
March ----------	43èF
April ----------	54èF
May ----------	65èF
June - August ------	68èF
September ----------	63èF
October ----------	56èF

November ---------- 48èF
December ---------- 40èF

The DNR recommends that these monthly average temperatures may be exceeded for short periods with approval from the WRC when natural water temperatures measured upstream of the project exceed the ninetieth percentile occurrence of water temperatures (i.e., the monthly average temperatures cited in item 3, minus the allowable 2èF deviation allowed in item 2). DNR recommends that, in all cases, temperature increases shall not be greater than the natural water temperature as measured upstream of the project plus the increase allowed in item 2.

The DNR states that Wolverine or the DNR may petition the WRC during every fifth year after the issuance of the license, to modify the above DO or temperature limits to ensure the protection of the public health, welfare, safety, and the natural resources of the state of Michigan, including the fishery resources. The DNR recommends that, upon approval of the WRC of all such petitions, the petition shall be submitted to the Commission to amend the license.

In addition, the DNR recommends that Wolverine, within 24 months of licensing, develop and implement a water quality monitoring program, in consultation with the DNR, that includes: (1) continuous monitoring of DO and temperature above the Tower pond, below Tower Dam, and below Kleber Dam with the sensor locations to be determined in consultation with the DNR; (2) a temperature mitigation plan; and (3) the preparation of operating procedures for DNR review and concurrence to address water quality conditions which deviate from the above limits.

Wolverine recorded DO concentrations and water temperatures in the headwaters and tailwaters of both the Tower and Kleber developments. Morning and afternoon measurements were taken for 3 days at the end of July, 1987. All but one DO measurement in either tailwater met or exceeded the state DO standard of 7.0 mg/l. Temperatures recorded downstream of the project dams approximated temperatures in each of the respective headraces. Further, the state standard that "temperature in the project tailwaters shall be no greater than a monthly average of 2èF higher than the temperature as measured upstream of the project dam" was not violated at either development for the 3-day sampling period.

To detect any thermal stratification, Wolverine recorded temperature profiles (0.75-foot vertical increments) in the Tower and Kleber ponds on July 27, 1987. Temperatures at the surface were slightly higher than the rest of the water column, likely due to solar radiation and surface mixing by wind. Little temperature stratification existed in Tower Pond [typically all measurements were within 1èC (1.8èF), with a maximum difference

of only 1.6èC (2.8èF)]. Kleber Pond did exhibit thermal stratification, as temperatures dropped from about 27èC [80.6èF] at the surface to around 11èC [52èF] near the bottom (about 31 feet). However, because water passing through the turbine at the Kleber powerhouse is withdrawn from the top 15 feet of the pond, the thermal stratification that does occur in Kleber Pond did not cause discharge water to be substantially different in temperature from inflow waters.

Based on the existing data, violations to state water quality standards do occasionally occur. Further, no definitive insights as to what level of impact would be solely attributable to the presence and operation of the Tower and Kleber Project can be drawn from the 3 day study conducted by Wolverine. To ensure that state standards of DO concentration and temperature are maintained, and to ensure compliance with the WQC, Wolverine must develop a plan and implementation schedule to monitor DO concentration and temperature upstream of the Tower pond, downstream of the Tower Dam, and downstream of the Kleber Dam.

The plan and implementation schedule should be developed after consultation with the FWS and the DNR and submitted for Commission approval, along with comments from these agencies and an explanation of how Wolverine's proposal incorporates DNR and FWS's recommendations or site-specific reasons for not including such recommendations. It should include measures for altering project operation to ensure maintenance of state standards for DO concentration and temperature in the Black River. Upon Commission approval, Wolverine should implement the water quality monitoring plan.

b. Project operation: Wolverine proposes to continue operating the Tower and Kleber Project in a run-of-river mode, such that outflow from the project downstream into the Black River equals inflow to the project's upper pond (Tower Pond). The headpond elevation for Tower Pond would be maintained at 722.1 feet National Geodetic Vertical Datum (NGVD), and the headpond elevation for Kleber Pond would be maintained at 701.1 feet NGVD. Wolverine also proposes to automate the Tower and Kleber Project. Prior to project automation, fluctuation around the headpond elevations will be ñ 0.5 foot. Wolverine proposes to reduce the fluctuation limit to ñ 0.25 foot once automation is complete. In order to minimize water level fluctuations in the impoundment and flows downstream of the project, operation of the project in a run-of-river mode is recommended by the Department of Interior (Interior) and DNR.

Operating the project in a run-of-river mode would minimize fluctuations of pond surface levels and would maintain the natural volume and periodicity of streamflow downstream from the project. Because the project would not alter streamflow in the Black River upstream or downstream, fish and wildlife habitats, including wetland areas, would not be affected by project

operation. In addition, reproductive potential and trophic relations would not be affected.

Therefore, we recommend that any license for the project include a requirement for (1) operating in a run-of-river mode; (2) maintaining pond levels to the extent that operating conditions and equipment calibration permits; and (3) setting a target elevation for Tower Pond at 722.1 feet NGVD and for Kleber Pond at 701.1 feet NGVD, while allowing for a fluctuation of ñ0.25 foot around the target elevation for the Tower and Kleber ponds once project automation is complete. Prior to automation, fluctuations should be no greater than ñ0.5 foot. We also recommend that normal elevation limits for the ponds be lifted under extreme conditions, such as wind and wave action on the pond level, instrumentation drift and uncertainty, and seasonal changes in flowage level from ice formation and subsequent breakup.

c. Gaging: To monitor compliance with run-of-river operation at the Tower and Kleber Project, Wolverine proposes to install continuous level recording devices in the pond and tailwater areas of both the Tower and Kleber developments. These water level sensors will be connected, through an existing computerized Supervisory Control and Data Acquisition (SCADA) system, to Taintor gates at each dam, thus, providing remote operation capabilities to the Taintor gates. Further, Wolverine proposes to provide funds to operate and maintain the existing downstream USGS gaging station (USGS Gage No. 04130500 located in Tower, Wisconsin), which will be equipped with telemetry equipment and sufficient memory for instantaneous and short-term retrieval of data over a phone line.

Interior and DNR recommend Wolverine develop and implement, in consultation with the FWS, USGS, and DNR, a streamflow gaging plan within 12 months of license issuance in order to verify run-of-river operation. This plan includes, in addition to what has been proposed by Wolverine, a contingency plan for a second USGS gaging station located upstream of Tower Pond. The DNR recommends that a three year test period be established to determine if the recommended gaging plan described above will be adequate to demonstrate compliance with run-of-river operation. If operational compliance with run-of-river operations can not be maintained with the downstream gaging station and the pond and tailwater sensors, the DNR recommends that Wolverine provide funds to establish, operate, and maintain an upstream USGS gaging station as well as operating and maintaining the existing downstream USGS gaging station. The DNR further states that the Tower and Kleber Project would be deemed in compliance if the outflow, as measured at the downstream gaging station, is within ñ5 percent of the inflow, as measured at the recommended upstream station.

Wolverine objects to providing funds to establish, operate, and maintain a USGS gaging upstream of Tower Pond, stating that the proposed limit of upstream and downstream discharge to ñ5 percent would be difficult to achieve at all times. We concur with Wolverine, and believe that Wolverine's proposed streamflow monitoring system is adequate to verify compliance with run-of-river operation and pond level requirements. The proposed system would provide sufficient means to maintain and monitor run-of-river operation.

We conclude headwater and tailwater elevation monitoring is necessary to verify run-of-river operation, including pond and tailwater elevation requirements. However, we believe that installation of a new upstream gaging station (for coordinated use with the existing downstream USGS gaging station) is not necessary.

Therefore, if a license is issued for this project, we recommend Wolverine, after consultation with the FWS, USGS, and the DNR develop a plan to monitor run-of-river operation of the project (including pond and tailwater requirements for both developments) and the flows at the Tower Gage. The plan should include methods of pond and tailwater elevation and flow data collection and should describe the proposed location, design, and calibration of all monitoring devices. The plan should also include an implementation schedule and a provision for providing elevation and flow data to the consulted agencies within 30 days from the date of an agency's request for the data.

d. Flow continuation during power outages: Project shut down could lead to an interruption in river flow below the project's two dams. An interruption in flow could create a stranding problem, which could kill small fish and other aquatic life. Interior recommends that Wolverine be required to pass river inflow through the project in the event of a project shut down. Interior indicates that its recommendation is intended to prevent the dewatering of downstream aquatic habitat.

To ensure that downstream habitat would not be dewatered in the event of a project shutdown, Wolverine plans to upgrade project operations from manual to automatic within three years of license issuance. Project automation will include remote operation of Taintor gates at the Tower and Kleber dams via a SCADA system. During a shutdown, the Tower and the Kleber ponds and their representative tailrace elevations would be maintained at the target elevations by the remote and automated controls for the automated Taintor gates.

We conclude that, in the event of a project shutdown, Wolverine's planned automation upgrade, as describe above, would be adequate to maintain river flow to prevent dewatering of aquatic habitat downstream of the Tower and Kleber Project.

Therefore, we recommend that any license for the project include a requirement that Wolverine install, operate, and maintain the proposed streamflow automation system. This automation system should include provisions for operating the Taintor gates via an alternative power source should the SCADA system fail.

3. Fishery Resources

Affected Environment:

The resident fish community in the Black River and the Tower and Kleber reservoirs include brook trout, northern pike, smallmouth bass, largemouth bass, pumpkinseed, bluegill, rock bass, yellow perch, bullhead, burbot, and common suckers. A wide variety of forage fishes and other non-game species also inhabit these areas. Lake sturgeon from Black Lake ascend the Black River to spawn downstream of Kleber Dam.

The DNR manages this area for the state-listed threatened lake sturgeon. The Fisheries Division of the DNR has been working with a unique population of lake sturgeon since the 1920's to maintain this run of fish. In 1973, the DNR constructed four sturgeon spawning reefs in the upper Black River between Kleber Dam and Black Lake. Historically, when the project operated in a peaking mode, Wolverine maintained a minimum flow of 80 cfs downstream of Kleber Dam during the May and June sturgeon spawning season. The proposed and current mode of operation (run-of-river) precludes the need for this provision. In 1982, the DNR began a recruitment program for Black Lake and adjacent Burt and Mullet Lakes. This program involves capturing and removing spawn from Black Lake sturgeon population. The fertilized eggs are hatched and reared at a state hatchery for subsequent planting in other locations as fingerlings.

The DNR also actively manages for black crappie, and stocks these fish in Kleber Pond upstream of Kleber Dam.

Environmental Impacts and Recommendations:

a. Pond drawdown: Wolverine proposes a 1-foot annual winter drawdown (pond fluctuation) in both the Tower and Kleber ponds in order to protect against ice damage. This drawdown occurs from November 1 to March 31 each winter. Fluctuating water surface levels can reduce fish spawning success and strand fish and invertebrates, subjecting them to desiccation and predation from terrestrial predators (Cushman, 1985). Large fluctuations in water level can also be detrimental to wetland plant species that depend on saturated soil (Rochester et al., 1984).

Brook trout, northern pike, smallmouth bass, and a variety of sunfishes are recreationally-important species that reside in

the Tower and Kleber ponds. Except for the brook trout, these fishes are most vulnerable to adverse effects from water surface elevation fluctuations during their spring spawning period when these fluctuations can lead to nest desiccation or nest abandonment (which may ultimately lead to predation of the young). The brook trout would be most vulnerable during its early fall spawning season. Further, the potential for adverse impacts is largely dependant upon the loss of aquatic habitat when the pond is drawn down.

Wolverine proposes to continue the one foot winter drawdown, which occurs at a time of year that would have little, if any, adverse impacts to aquatic habitat, (i.e., spawning and nursery habitat of fishes inhabiting the project's two ponds). Adverse impacts to juvenile and adult habitat would also be minimized. The FWS and the DNR concur with this proposal.

Operating the project with a one foot winter drawdown would prevent excessive dewatering of fisheries habitat and wetlands resulting from lowered water levels and would prevent any significant adverse impacts to spawning, nursery, juvenile, and adult fish habitat during the critical spring, summer, and fall periods. Impacts during the winter months would be minimal because fishes tend to concentrate in deeper portions of the ponds where aquatic habitat is more favorable. Therefore, if a license is issued for the Tower and Kleber Project, we recommend that Wolverine be required to limit drawdown of the project's ponds to one foot during the winter months in order to protect fish habitat in the two ponds.

b. Turbine entrainment and impingement: Project operation may affect the fishery resources by entraining fish into project turbines that may cause fish injury and mortality. Mortality or injury could occur as a result of fish being struck by turbine blades, pressure changes, sheer forces in turbulent flows, and water velocity accelerations (Knapp et al., 1982; Cada, 1990).

Wolverine presented entrainment and mortality estimates for fishes at the project in a filing to the Commission dated December 30, 1991. Entrainment rates and mortality estimates were based upon site-specific studies. Entrainment rates at the Tower development were generally low, averaging 83 fish per day (or 30,295 fish per year). Wolverine estimated immediate and delayed mortality to be 28 percent and 9 percent, respectively. Estimated annual entrainment mortality at the Tower development is 11,209 fish. Entrainment at the Kleber development was considerably higher, averaging 173 fish per day, with annual entrainment of 63,145 fish. Wolverine estimated immediate and delayed mortality to be 41 percent and 2 percent, respectively. Using these mortality estimates, annual entrainment mortality at the Kleber development is estimated at 27,152 fish.

The DNR estimates an entrainment mortality rate at the Tower development of 9,787 fish per year, with an annual restitution value under Michigan's Public Act 43 (1986) of $44,858. Entrainment mortality at the Kleber development was estimated at 23,638 fish per year, with an annual restitution value under Michigan's Public Act 43 (1986) of $210,083. These restitution values include a replacement social value for the killed fishes. The DNR estimates the annual replacement value of fishes to be $11,200 (Tower Dam) and $18,404 (Kleber Dam) (1992 dollars). These estimates were also based on the 1982 American Fisheries Society fish replacement values (American Fisheries Society, 1982), with a multiplier of 1.38 (based upon the Consumers Price Index (CPI)) to adjust to 1992 values.

Based on the study results, the DNR considers this level of mortality significant. Accordingly, the DNR recommends Wolverine, after consultation with, and with approval of the resource agencies, develop a turbine mortality and entrainment protection and mitigation plan, including contracting a qualified consultant to evaluate all potential protection devices to prevent fish losses at the project and developing and implementing a 4-year phased approach to prevent turbine mortality at the Tower and Kleber Project. If no protection device is determined to be feasible at the project, the DNR recommends Wolverine pay the annual restitution value, adjusted for 1982 dollars by the CPI, to the State of Michigan Game and Fish Habitat Improvement Fund by October 1 of each year. The DNR states all such funds would be earmarked for use on fisheries enhancement projects in the Black River system in the vicinity of the project and that DNR would provide Wolverine and the Commission an accounting for all funds by December 1 of each year. The DNR states that construction costs for fish passage installation may be used as a credit against fish damages from turbine mortality with the concurrence of the DNR and the FWS and with the approval of the Commission. The DNR also recommends that all installed devices have an effectiveness study, designed and conducted by the licensee with agency consultation and approval, and that all modifications to the protective devices to meet both engineering and biological design specifications be done by the licensee.

Wolverine and the DNR have agreed to a fish protection plan that includes:

(1) A four phase process to prevent fish losses at both the Tower and Kleber Dams. The four stages, in order, are: (a) the installation of a new bar rack to physically exclude fish; (b) addition of an electrical field to the bar rack; (c) the installation of a barrier net; and (d) the installation of a Louver system;

(2) A four year period to complete this phased approach during which fish damage values are waived;

(3) An evaluation process to verify effectiveness of each device installed using a similar study plan to that used in the entrainment study, which is to be developed in consultation with the DNR; and

(4) Payment of residual fish damages after the phased approach is completed and the effectiveness of the devices are determined. The value of these losses will be negotiated between the DNR and Wolverine.

Although Wolverine agrees to pay for the design and evaluation of the potential protective devices and for implementation of one of the devices (or more, if this proves necessary), they do not believe that "complete" fish protection is possible. Wolverine states that the Commission should make some allowances for fish losses which would not be compensated for. Further, Wolverine disagrees with DNR's use of restitution value for mitigating fish losses.

Although we find the prevention of fish mortality due to entrainment at a project ultimately more desirable than monetary compensation for lost fishes, we recognize, in some instances, the costs associated with prevention of fish entrainment mortality may be excessive given the benefits derived. Under these circumstances, compensation for fish losses may be appropriate.

We do not agree with the DNR's recommendation for Wolverine to reimburse the state or provide enhancement at the cost of the state's restitution value of the killed fishes. The fishes killed may be replaced by stocking without notable losses to the recreational value of these fishes. The fishery in the Black River, and in the project area itself, has been supplemented by stocking. The DNR has previously stocked black crappie in the Kleber pond. We do not perceive stocking would contaminate pure stocks of fish in the system.

We concur with the fish protection and mitigation plan developed between the DNR and Wolverine. Further, we believe that Wolverine should not be required to pay restitution value for fishes killed at the project. Therefore, we recommend that for any license issued for the Tower and Kleber Project, Wolverine be required to develop and implement the plan as described in the DNR letter dated December 4, 1992, which is discussed above. The plan should be modified such that Wolverine, in addition to the fish protection device(s) used, be required to reimburse the state for fishes killed at the project based on fish replacement costs and not restitution value of the killed fishes.

Implementation of the above measures would adequately compensate the public for losses to its fishery resources caused by operating the project and promote the development and application of appropriate resource protection measures. It would also minimize any cumulative adverse impacts to the fisheries on the Black River.

c. Fish passage: Presently, the DNR is evaluating the need for fish passage in the Cheboygan River system, including the Black River. Fish passage is the emphasis of a river management plan which will be developed in the near future. Currently, there are no anadromous fishes in the project area needing to pass the Tower and Kleber dams. However, the DNR believes that this contingency should be planned for in any license issued for the project.

The DNR recommends that Wolverine complete an upstream fish passage plan, including retaining a qualified consultant to design and evaluate fish passage devices for the Tower and Kleber Project, and to construct, operate, and maintain appropriate fish passage facilities and provide necessary operating flows at the project if effective fish passage provisions are determined to be economical at either site. The DNR recommends the design criteria be determined after consultation with the DNR and FWS, and be with the approval of the Commission. If no device is determined to be economical at either site, the DNR recommends that Wolverine conduct an evaluation of fish passage provisions every five years until fish passage is installed. The DNR also recommends that all fish passage facilities have an effectiveness study designed and conducted after consultation with the DNR and the FWS, and with Commission approval, and that any modifications to the fish passage facilities to meet engineering and biological design specifications be performed by Wolverine.

The DNR justifies its recommendations on the premise that the yet-to-be developed river management plan may call for the restoration of anadromous runs of fish to riverine areas above the Tower and Kleber Project. Further, the DNR states that many "resident" fish species utilize large amounts of riverine habitat and that these fishes may undertake long distance migrations to gain access to needed areas. The DNR believes fish passage at the project may be necessary for access of resident fishes to upstream portions of the Black River.

The DNR may request fish passage in the future under the provisions of the standard articles included in the license or

through Interior, which may request fish passage in the future under Section 18 of the Federal Power Act (Act).11/

d. Lake sturgeon management plan: Black Lake and the upper Black River support a significant population of lake sturgeon, which has been the target of management by the DNR. Wolverine has worked with the DNR informally in recent years to manage this important fishery resource. The DNR recommends Wolverine develop and implement a plan to protect and enhance lake sturgeon habitat in the upper Black River downstream of Kleber Dam. We concur with the DNR, and conclude that the development of a lake sturgeon management plan would provide a valuable, formalized setting for lake sturgeon management in the Black River Basin. However, we disagree with the DNR's recommendation that Wolverine should develop and implement the plan. The DNR has the responsibility to act as steward for a publicly utilized resource within Michigan. Given this role of public steward, the DNR has the responsibility to manage Michigan's resources, including state-listed species such as lake sturgeon.

Accordingly, we recommend that, if a license is issued for the project, Wolverine should be required to enter into a formal agreement with the DNR to manage lake sturgeon in the Black River. Wolverine should cooperate with the DNR in developing and implementing the management plan. Wolverine's involvement would begin when development of such a plan is deemed appropriate by the DNR, and should be limited to operational considerations of the Tower and Kleber Project. Once developed, the lake sturgeon management plan should be filed with the Commission.

e. Section 18 reservation of authority: Interior requested reservation of authority to prescribe the construction, operation, and maintenance of fishways for the Tower and Kleber Project pursuant to Section 18 of the Act (Jonathan P. Deason, Director, Office of Environmental Affairs, Department of the Interior, Washington, D.C., December 7, 1992). Wolverine Power concurs with Interior's request for the reservation of authority.

Section 18 of the Act provides the Secretary of the Interior the authority to prescribe fishways. Although fish passage facilities may not be recommended by Interior at the time of project licensing, such as for the Tower and Kleber Project, the Commission should include a license article which reserves

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

Interior's prescription authority.12/ We recognize that future fishway needs and management objectives cannot always be predicted at the time of license issuance. Under these circumstances, and upon receiving a specific request from Interior, the Commission should reserve Interior's authority to prescribe fishways.

4 Terrestrial Resources

Affected Environment: Vegetation in the project area includes: paper birch, maple, popular, American hophornbeam, red pine, white pine, white cedar, balsam fir, spruce, elm, and basswood. Shrubs in the area include: grey, red ozier, and alternate-leaved dogwoods as well as alders. There are approximately 8.7 acres of wetlands at Tower Pond and at Kleber Pond there are about 27.3 acres of wetlands. Pondweed, waterweed, wild celery, water lily, cattails, bullrushes, sedges, and reeds are the dominant wetland vegetation. These wetlands afford nesting and resting opportunities to migrating waterfowl.

Common animal species in the project area include: cotton-tail rabbit, gray and fox squirrel, ruffed grouse, and white-tailed deer. Furbearers resident to the area include: mink, river otter, muskrat, and beaver.

There are two primary transmission lines within the project's boundary. A 150-foot-buried transmission line runs from the Tower Project to the Wolverine substation, and the other is a 4-mile-long line which starts at the Kleber Project generator plant bus and ends at the Presque Isle distribution load tap.

Environmental impacts and recommendations:

a. Monitor and control/eliminate nuisance plants: Purple loosestrife (Lythrum salicaria) and European milfoil (Myriophyllum spictum) are plants introduced from Europe. Often they grow profusely, at the expense of the native wetland vegetation, reducing the wildlife habitat value of wetlands. Both plants have little food value for wildlife.

The DNR recommended the applicant in consultation with the DNR develop and implement a plan to monitor and control/eliminate, when deemed appropriate by the DNR, purple loosestrife and European milfoil in project waters.

Wolverine doesn't agree with DNR's recommendation to develop and implement a plan to monitor and control/eliminate purple loosestrife and European milfoil. Wolverine states that there is

12/ Lynchburg Hydro Associates, 39 FERC ¶ 61,079 (1987).

no documentation of the plants being present, and therefore objects to the inclusion of this recommendation.

There is no evidence that either plant exists in the project area. Furthermore, measures available to control these species are limited. However, should it be deemed necessary to control Purple loosestrife and European milfoil in the project and surrounding areas, and safe control measures become available, the applicant should cooperate with the DNR to implement control measures. Therefore, we recommend that these measures be included in any license issued for the Tower and Kleber Project.

b. Wildlife habitat resources: The DNR recommends that Wolverine develop and implement, in coordination with the DNR, a wildlife management and land use plan that (a) enhances and protects wildlife habitat, and (b) provides for the protection of environmentally sensitive areas, and a plan to protect and enhance any federal or state listed threatened, endangered, or sensitive species on project lands to include specific protective measures.

The DNR also recommends that Wolverine, for the conservation and development of fish and wildlife resources, construct, maintain, and operate, or arrange for the construction, maintenance, and operation of such reasonable facilities, and comply with such reasonable modifications of the project structures and operation, as may be ordered by the Commission upon its own motion or upon the recommendation of the Secretary of the Interior or the fish and wildlife agency or agencies of any state in which the project or a part thereof is located, after notice and opportunity for hearing.

The Coalition believes that the licensee should develop provisions that simulate natural conditions to the greatest extent possible and guard against habitat degradation and for the restoration of degraded habitat caused by the project.

We agree with the DNR and the Coalition. Wolverine agrees to provide nesting boxes for ducks and other waterfowl; maintain a sandy area for turtles; and provide an osprey platform as requested by DNR during the January 15, 1993 meeting between DNR and Wolverine. Maintaining run-of-river will not affect existing wetlands or other wildlife habitat, as well as other measures summarized on page 30.

We agree with the plan for wildlife habitat enhancement measures proposed by Wolverine. Further, implementing the measures for protection of the bald eagle, as described in section V.B.4, would provide adequate wildlife habitat enhancement at the project.

We recognize that future fisheries and wildlife needs and management objectives cannot always be predicted at the time of license issuance. Therefore, the Commission has provided for its option to require changes to projects upon its own motion and opportunity for hearing. Such provisions are included in the standard articles of currently licensed projects.

5 Threatened and Endangered Species

Affected Environment: The FWS states that the federally-listed bald eagle (Haliaeetus leucocephalus) forages along the Black River and the project ponds. No bald eagle nests have been found within the project boundary.

Environmental Impacts and Recommendations: We completed a biological assessment of the effect of continued project operations on the bald eagle on October 16, 1992 (Dean Shumway, Director, Division of Project Review, Federal Energy Regulatory Commission, Washington, D.C., October 16, 1992). We concluded that no adverse effects are likely with our enhancement recommendations. The FWS agreed by letter dated November 13, 1992 (John Hamilton, Acting Supervisor, U.S. Fish and Wildlife Service, East Lansing, Michigan, November 13, 1992).

Accordingly, we are recommending that the measures outlined below become a part of any license issued for the Tower and Kleber Project in order to protect future bald eagle habitat and nests.

a. Operate the project in a run-of-river mode to minimize headpond and downstream water level fluctuations, and therefore, help prevent loss of shoreline perch or roost trees from shoreline erosion;

b. Maintain and protect bald eagle perch trees by prohibiting clear-cutting of trees (Diameter breast height of 12 inches or greater) within 200 feet of the ponds' shorelines, except to clear felled or disease-damaged trees, which may affect public safety or project-related operation. In the event project operation and/or maintenance would involve any tree removal along the ponds' shorelines or stream sections within the project boundary, the licensee must contact the FWS and DNR for approval, before removing any identified tree(s);

c. Restrict human activity, such as birdwatching and hiking, in consistently used bald eagle feeding area(s) by posting the areas(s). A distance of 1,320 feet is recommended as a minimum buffer zone for human presence;

d. Conduct annual meetings with the FWS and DNR to identify any new nest, or previously unknown and potential nesting,

roosting, or feeding sites in the project area, which would be subject to protection; and

e. To protect the forage base of the bald eagle, the licensee shall not participate in, encourage, or support the removal of rough fish, such as carp, sucker, or bullhead, in the pond or stream sections within the project boundary.

6. Cultural Resources

Affected environment: The Tower Dam and powerhouse were constructed in 1917 and 1918 and began operation in 1918. Kleber Dam and powerhouse were built in 1948 and 1949 and began operation in 1949. The project is neither listed nor eligible for listing on the National Register of Historic Places.

Environmental impacts and recommendations: Every reasonable effort has been made to search for listed and eligible National Register properties in the project area, without any such properties being discovered. Moreover, upon review, the State Historic Preservation Officer (SHPO) judged the project as not eligible for listing in the National Register, and cleared all work proposed for the project with a determination of "No Historic Properties Found" (letter to Richard Love from Martha Bigelow, Michigan State Historic Preservation Officer, Michigan Bureau of History, Lansing, Michigan, February 25, 1987).

In view of the results of discovery efforts and the SHPO's determination, and because no land-disturbing activities are proposed, we find that the project would have no effect on any structure, site, building, district, or object listed on or eligible for listing on the National Register.

Despite this however, there remains the possibility for affecting National Register and eligible properties.

First, our no effect determination is based on Wolverine's proposal involving no ground-disturbing activities. Before engaging in any ground disturbance not covered by the proposed licensing action, Wolverine 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; and (d) do nothing to affect National Register or eligible properties until notified by the Commission that all these requirements have been satisfied.

Second, there is still the possibility that there could be significant undiscovered properties in the project area that could be adversely affected by project operation. If such properties are found during project operation, Wolverine 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's approval; and (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.

7. Recreation and Other Land and Water Uses

Affected Environment: Public recreational use at the two ponds and tailrace has historically been small due to limited formal public access facilities around the 372 acres of combined water surface at the Tower and Kleber ponds. However, limited fishing, swimming, boating, and canoeing occur.

Wolverine consulted extensively with the DNR, and filed a revised recreation enhancement plan as part of its application for license (Table 1). The plan outlines a 3-phase schedule of public access improvements at the project. Phase 1 has been completed, phase 2 is scheduled to be completed before January 1995, and phase 3 would be implemented as future needs require. The tabulation below outlines Wolverine's recreation plan.

Table 1. Revised recreation plan for Tower and Kleber Project (Source: Wolverine Power Supply Corporation, Inc., December 11, 1992)

Phase/Facility	Description
Phase 1:	
Tower Pond	ù Improve boat access ramp and parking area; install vault toilet and signs. ù Improve canoe take-out and install signs.
Tower Dam	ù Improve canoe launch area, construct trail and signs.
Kleber Pond	ù Improve canoe take-out, construct trail and signs.
Kleber Dam	ù Construct tail race fishing access on powerhouse side, including parking area. ù Improve access road for tailrace fishing access on side opposite powerhouse, construct parking area, vault toilet, and signs. ù Improve canoe launch area, construct trail and signs.
Phase 2:	
Tower Pond	ù Construct access road and parking area to potential DNR-owned fishing area on old railroad bridge; install vault toilet and signs; facilities would be accessible to the disabled.
Tower Dam	ù Construct foot path from potential DNR fishing area to canoe portage.
Kleber Pond	ù Improve existing boat access ramp and access road; construct parking area, vault toilet, and signs.
Phase 3:	
Kleber Pond	ù Improve foot path for shoreline fishing area.

Wolverine reports that it has spent $127,230 on the completed phase 1 recreational improvements, and plans to spend an additional $87,500 on phase 2 recreational improvements. As a result of the recently completed phase 1 recreational improvements, Wolverine reports that public use is increasing at

the project, with the most concentrated use reported at the Kleber dam tailrace fishing area (350-400 visitors in 1992).

Environmental Impacts and Recommendations: The DNR recommends implementation of phased recreation improvements at the project that are generally consistent with the plan proposed, and partly implemented, by Wolverine. However, some of the detailed recommendations of the DNR extend beyond the measures specifically included in Wolverine's proposed plan, including the following: (a) no user fees at the boat launching areas; (b) functional and final design drawings for all proposed facilities subject to DNR approval: (c) all facilities designed barrier free to accommodate the disabled; (d) directional signs constructed along major highways to all the project recreation areas; and (e) DNR review all of proposed leases of project land and development and implementation of a lease compliance program.

Wolverine does no object to the DNR's recommended measures, except for the construction of directional signs along major highways. Wolverine believes this responsibility lies with public authorities.

We concur with the revised recreation enhancement plan proposed by Wolverine, and the additional recommendations of the DNR except for: (1) DNR's recommended prohibition of any recreational use fees at project facilities, and (2) DNR's recommended approval authority in reviewing the recreation facility designs. We often allow licensees to charge reasonable recreation user fees to help offset the costs of the facilities and improvements, and we will afford Wolverine this same opportunity. We recommend that Wolverine continue to consult with the DNR on recreational issues, but note that approval authority for the final phase 2 recreation plans rests exclusively with the Commission under the terms of any license.

In regard to DNR recommendation (e) above, the Commission's standard land use article requires that, for most project conveyances, the Licensee must consult with the state and Federal resource agencies, and subsequently 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 any instrument of conveyance. We conclude that our standard land use license article would satisfy the objectives of the DNR. Wolverine notes that it has not leased any of its lands in the project area.

We recommend approval of the revised recreation plan filed by Wolverine in any license issued for the project, and will also recommend that the Licensee file as-built drawings for the phase 1 and phase 2 facilities, as well as accompanying reports that describe: (a) how the facilities would accommodate the disabled, (b) scope of its sign program, including signage from major

roads, (c) plans for operation and maintenance of the facilities, and (d) evidence of consultation with the DNR and the National Park Service (NPS) on the plans.

8. Project retirement: The DNR recommends, pursuant to Section 10(j) of the Act, that Wolverine shall, 10 years after license issuance, begin consulting with the DNR on a plan for studying the costs of: (a) permanent non-power operation; (b) partial project removal; or (c) complete project removal at the Tower and Kleber Project.

Within 6 months thereafter, Wolverine would submit the study plans to the FERC for approval. Within 24 months after approval of the plans by the FERC, Wolverine would complete the studies called for by the plans, unless the FERC established a different period for study completion. On completion of the studies, Wolverine would submit study reports to the FERC and DNR.

In the first retail and wholesale general change of rate fillings following the completion of the studies, Wolverine would include costs related to the establishment of trust funds to collect from the ratepayers the costs of permanent non-power operation, partial project removal, or complete project removal. If the Michigan Public Service Commission (MPSC) or the FERC did not approve Wolverine rates insofar as they reflect costs related to the trust funds, it would include such costs in successive retail and wholesale general change of rate filings unless the DNR believed that making such a proposal would be unproductive.

The State of Michigan on behalf of Wolverine's ratepayers would be the beneficiary of the trust funds unless otherwise directed by the MPSC or FERC. The proposed license condition would state that nothing therein could be constructed to create an obligation on Wolverine's part to retire the project or not seek additional new licenses for the project.

Wolverine stated by letter dated January 19, 1993, that it has no present or contemplated plans to remove the dams at any time in the future. Wolverine has always maintained the dams so as to provide safe and reliable water power, in addition to providing recreation and wildlife habitat for the area. To remove the dams may result in legal exposure for violating established riparian rights of adjoining owners.

Wolverine disagrees with the need for a "retirement" fund and questions whether such a fund would be allowed by the MPSC in establishing's Wolverine's rates. Wolverine, will, however, maintain a ten-year advance plan at all times for the operation and maintenance of the hydroelectric projects, including the dams, the recreational facilities, and promoting the environmental habitat and will agree to give the DNR and the

Commission a ten-year notice before it commences discontinuance of either of the facilities.

We conclude preliminarily that DNR's recommendation is not a recommendation pursuant to Section 10(j) of the Act, in that it does not provide measures for the protection, mitigation of damages to, and enhancement of fish and wildlife resources. We will, however, consider it pursuant to Section 10(a) of the Act.

DNR has provided no persuasive evidence, indeed no evidence at all, to support its recommendation and we conclude that it is inappropriate. The ten-year date for comprehensively reexamining our 10(a) determination is completely arbitrary. The Commission has no way of knowing at this juncture how long the Tower and Kleber Project will continue to be economically justified. Its remaining economic life depends on factors such as future costs of alternative energy, system generation and load analyses, and continuing maintenance and repair expenses that cannot even be guessed at this time. Many projects under license exceed seventy years in age with no end to their economic life in sight. Nor can we determine now that it will be appropriate to revisit environmental concerns in ten years. An appropriate time might be two years or five years or twenty-five years, depending on future conditions. To require the Licensee to undertake expensive decommissioning studies at a specific future time in the complete absence of any evidence they will then be appropriate seems to us unwise. Similarly, it would not be appropriate to establish now what issues will be considered in Wolverine's MPSC and FERC rate cases ten or more years hence without a demonstration that the issue will then be ripe for consideration, or give DNR sole authority to determine whether or not this will be an issue.

The appropriate way to approach future dam decommissioning studies is for DNR to avail itself of Standard Article 17, under which it may at any time during the license term request the Commission to require Wolverine to undertake such studies based on a showing that they are warranted under the conditions then extant. Such a request may be based on economic or environmental consideration, or both. We think it is reasonable to assume that if the Commission does determine it is appropriate to establish a decommissioning fund, Wolverine will seek to recover its costs in its rates.

C Impacts of the No-Action Alternative

Under the no-action alternative, the project would continue to operate as it has in the past and without any changes to the existing physical, biological, or cultural components of the area.

VI. COMPREHENSIVE DEVELOPMENT AND RECOMMENDED ALTERNATIVE

Sections 4(e) and 10(a)(1) of the Federal Power Act, require the Commission to give equal consideration to all uses of the waterway on which a project is located. When the Commission reviews a proposed project, the recreation, fish and wildlife, and other nondevelopmental values are considered equally with power and other developmental values. In determining whether, and under what conditions, a hydropower license should be issued, the Commission must weigh the various economic and environmental tradeoffs involved in the decision.

A. Recommended Alternative

No reasonable action alternatives to the proposed project have been identified for assessment (see section III.B). Based on our independent review and evaluation of the proposed project, the proposed project with our enhancement measures, and the no-action alternatives, we have selected the proposed project, with our recommended enhancement measures, as the preferred option. We recommend this option because the net benefits of the project outweigh the consequences associated with taking no action.

B. Developmental and non developmental uses of the waterway

The proposed project with our recommended enhancement measures would provide a number of benefits. An estimated 7,498.5 MWh of relatively low-cost electricity, currently worth about $297,165 13/ would continue to be generated annually from a clean, domestic, reliable, and renewable energy resource for use by seven of Wolverine's nearby wholesale cooperative customers14/.

The project's costs would be to operate and maintain the entire hydropower complex which are negligible when compared to the value of the power. The beneficial effects on the environment associated with the licensing of the Tower and Kleber Hydro Project would result from the enhancement measures required for the protection of natural resources in the project area. Enhancement measures include:

(a) operation of project in run-of-river mode;

13/ 7,498,500 kWh at 39.63 mills/kWh.

14/ The electricity potentially generated by the proposed project is equivalent to the energy that would be produced by burning 3,147 tons of coal annually in a steam-electric power plant.

(b) passage of streamflow equal to inflow into the project during emergency shutdowns;

(c) implement water quality monitoring plan;

(d) limit winter draw down to no more that 1 foot;

(e) cooperate with DNR to develop a formal Lake sturgeon management plan, however participation will be limited to operational considerations only;

(f) implement a turbine and entrainment protection and mitigation plan;

(g) implement monitoring plan for compliance with dissolved oxygen and temperature limits;

(h) implement plan to control/eliminate noxious water plants when deemed appropriate;

(i) implement bald eagle protection measures; and

(j) protect any previously undiscovered properties that may be eligible for listing on the National Register of Historic Places;

We have analyzed the economic impacts of providing the enhancement measures. The economics of the project were based on the following assumptions:

(a) the project would generate an average of about 7,498,500 kWh of energy annually;

(b) the levelized unit energy value of the project's power is 39.63 mills/kWh;

(c) the annual hydroelectric operation and maintenance cost is insignificant; and

(d) enhancement measures would result in no lost generation annually.

Since it is not possible at this time to foresee future changes to project operations or other mitigative or enhancement measures that may become necessary to protect the fishery and wildlife resources at the project, it is also not possible to estimate the costs of these measures. Prior to the Commission ordering specific changes to project operations or other mitigative or enhancement measures, as may be recommended by resource agencies in the future, Wolverine would be provided the opportunity for a hearing. At such a hearing, any costs

associated with the change affecting the economic viability of the project could be presented and considered.

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 for improving, developing, or conserving a waterway or waterways affected by the project. Under Section 10(a)(2), Federal and state agencies have filed a total of 47 plans for Michigan and seven for the United States. We have determined that two of these plans are relevant to this project.15/ No conflicts were found. Although Michigan's recreation plan (1985) shows no need for improving resource-based recreational opportunities in Cheboygan County, the DNR has identified a need for improved public access at the project, especially facilities for the disabled. We conclude that the phased approach to recreation development proposed by Wolverine would be consistent with Michigan's recreation plan.

VII. PRELIMINARY DETERMINATION OF CONSISTENCY WITH FISH AND WILDLIFE RECOMMENDATIONS

Pursuant to Section 10(j) of the Act, we determine that all of the U. S. Department of Interior's (Interior) recommendations are consistent with the purpose and requirements of Part I of the Act and applicable law. 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 of, mitigation of adverse impacts to, and enhancement of fish and wildlife resources. We have addressed the concerns of the Interior and made recommendations consistent with them.

Pursuant to Section 10(j) of the Act, we are making a preliminary determination that certain recommendations of the Michigan Department of Natural Resource are inconsistent with the purpose and requirements of the comprehensive planning and public interest standards of Sections 4(e) and 10(a) of the Federal Power Act. These are DNR's following recommendations: (1) requiring Wolverine to develop and implement an upstream fish passage plan, (2) requiring Wolverine to develop and implement a turbine mortality and entrainment plan, and (3) requiring Wolverine to develop and implement a management plan for lake sturgeon as well as other state threatened, endangered, and sensitive species.

15/ Michigan Department of Natural Resources, Building Michigan's recreation future: the 1985-90 Michigan recreation plan, 1985; and Fish and Wildlife Service and Canadian Wildlife Service, North American Waterfowl Management Plan, May 1986.

Moreover, the DNR's recommendations (1) a gaging plan; (2) a recreation plan; (3) a water quality monitoring plan, and (4) a plan for studying the costs of permanent non-power operation, partial project removal, or complete project removal at the Tower and Kleber Project are inappropriate fish and wildlife recommendations, under Section 10(j) of the Act, in that they do not provide measures for the protection, enhancement, mitigation of damages to, and enhancement of fish and wildlife resources.

Upstream Fish Passage Plan. The DNR has provided no persuasive evidence to support its recommendation to develop and implement an upstream fish passage plan. Although fish passage may be necessary for the enhancement of a future anadromous

fishery, there is no evidence to warrant fish passage for the resident fishes in the vicinity of the Tower and Kleber Project at this time. In place of the DNR's recommendation, we recommend that any license issued for the Tower and Kleber Project include standard articles wherein the DNR may request fish passage in the future, or through Interior, which may request fish passage in the future under Section 18 of the Act. We have recommended that any license issued include an article reserving Interior's authority to prescribe fishways.

Turbine Mortality and Entrainment Plan. The DNR and Wolverine have agreed to a fish protection plan, which requires, in part, that Wolverine pay for the design and evaluation of four separate fish protection measures. The plan also requires Wolverine to compensate for any residual fish losses once fish protection measures are in place. The DNR requires compensation in the form of restitution value.

We concur with the fish protection and mitigation plan agreed to by the DNR and Wolverine as discussed in section V.B.3.b. However, we believe that Wolverine should not be required to pay restitution value for fishes killed at the project. The fishes killed may be replaced by stocking without notable losses to the recreational value of these fishes. Therefore, we recommend that for any license issued for the Tower and Kleber Project, Wolverine be required to develop and implement the plan. The plan should be modified such that Wolverine, in addition to the fish protection device(s) used, be required to reimburse the state for fishes killed at the project based on fish replacement costs and not restitution value of the killed fishes.

Lake Sturgeon Management Plan: The DNR recommends Wolverine develop and implement a plan to protect and enhance lake sturgeon habitat in the Black River downstream of Kleber Dam. We concur with the DNR, and conclude that the development of a lake sturgeon management plan would provide a valuable, formalized setting for lake sturgeon management in the Black River Basin. However, we disagree with the DNR's recommendation that Wolverine

should develop and implement the plan. The DNR has the responsibility to act as steward for a publicly utilized resource within Michigan. Given their role, the DNR has the responsibility to manage Michigan's fishery resources, including the state-listed lake sturgeon.

VIII. FINDING OF NO SIGNIFICANT IMPACT

Implementing the mitigative measures described in this environmental assessment would ensure that the environmental effects of project construction and operation would be insignificant.

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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X. LIST OF PREPARERS

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Figure 1. The location of the proposed Tower and Kleber Hydroelectric Project.

Figure 2. Location of project features of the Tower Pond Development for the Tower and Kleber Hydroelectric Project, FERC No. 10615, Michigan, (Adapted from the Wolverine Power Supply Cooperative, Inc., 1989, application, exhibit G).

Figure 3. Location of project features of the Kleber Pond Development for the Tower and Kleber Hydroelectric Project, FERC No. 10615, Michigan.

UNITED STATES OF AMERICA 67 FERC ¶ 62,126
FEDERAL ENERGY REGULATORY COMMISSION

Wolverine Power Supply Cooperative, Inc. — Project No. 10615-001 — Michigan

ORDER ISSUING LICENSE
(Major Constructed Project)
(Issued May 12, 1994)

The Wolverine Power Supply Cooperative, Inc. (Wolverine), filed a license application under Part I of the Federal Power Act (FPA) to continue to operate and maintain the existing but unlicensed 1,760-kilowatt (kW) Tower and Kleber Hydro Project located on the Black River, a navigable waterway of the United States, in Cheboygan County, Michigan.

BACKGROUND

Wolverine is not proposing to add any new capacity, or make any major modifications to the project. The project was found jurisdictional under Docket No. UL 86-1.1/

Notice of the application has been published. No agency or other entity objected to or opposed the issuance of this license. The comments received from interested agencies and individuals have been fully considered in determining whether to issue this license. Michigan Department of Natural Resources (Michigan DNR) and the Michigan Water Resources Commission jointly filed a motion to intervene in order to be a party to the proceedings. The Anglers of the AuSable, Inc., the Great Lakes Council, Inc. of the Federation of Fly Fishers, Inc., the Michigan United Conservation Clubs, and the Michigan Council of Trout Unlimited filed a collective motion to intervene in order to protect their interests with respect to the nondevelopmental values of the Black River.

The Commission's staff issued an Environmental Assessment (EA) for this project on April 7, 1993, which is attached to and made part of this license. The staff also prepared a Safety and Design Assessment (SDA) which is available in the Commission's public file for this project.

PROJECT DESCRIPTION

The Tower and Kleber Hydro Project consists of two

1/ The Black River was found navigable based on a navigation status report prepared by the Commission's Chicago Regional Office in May of 1939.

97 FERC ¶ 62, 194
UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Black River Limited Partnership Project No. 11730-000

ORDER ISSUING ORIGINAL LICENSE
(Minor Project)
December 4, 2001

INTRODUCTION

Franklin Hydro Inc. on behalf of the Black River Limited Partnership (BRLP) filed on April 21, 1999, pursuant to Part 1 of the Federal Power Act (FPA),[1] an application for a minor license for the unlicensed 1.1 megawatt (MW) Alverno Hydroelectric Project No.11730. The project is located on the Black River in Cheboygan County, Michigan.[2]

BACKGROUND

The Commission issued a public notice soliciting motions to intervene for the project on August 19, 1999. The Michigan Department of Natural Resources (MDNR), Michigan Department of Environmental Quality (MDEQ), and the Michigan Hydro Relicensing Coalition (MHRC) filed timely interventions, but did not oppose the project. The Commission then issued a public notice on January 28, 2000, indicating the project was ready for environmental analysis and soliciting comments, recommendations, and terms and conditions. In response, the Commission received comments from the MDNR, the U.S. Department of the Interior (Interior), and the Black Lake Association.

On October 19, 2000, the Commission staff made available for public comment a draft environmental assessment (DEA). The DEA recommended that the project be licensed with certain additional mitigation measures, and found that licensing the project would not constitute a major federal action significantly affecting the quality of the human environment. Comments on the DEA were filled by the MDNR, MDEQ, and BRLP. The Commission issued the final environmental assessment on August 14, 2001,

[1]16 U.S.C. § § 791a - 825r.

[2]The Black River is a navigable waterway of the United States, see 67 FERC 62,057 (1994). Therefore, Section 23 (b) (1) of the 16 U.S.C. § 817 (1), requires the project to be licensed.

which is attached to this license and incorporated by reference. The motions to intervene and comments filed by the agencies and interested parties have been considered and addressed in this order in determining whether, and under what conditions to issue this license.

PROJECT DESCRIPTION

The constructed project consists of a powerhouse located on the eastern riverbank that is integral with a 360-foot-long earth-filled dam. The dam includes a concrete spillway towards the western river bank that is controlled by a 16-foot high radial gate. A three-foot wide abandoned log chute and fish ladder is located adjacent to the spillway. The impoundment formed by the dam extends approximately 2.5 miles upstream and has a normal surface area of 80 acres and a gross storage capacity of 480 acre-feet. The 76-foot concrete powerhouse contains two horizontal, 6-foot diameter propeller turbines and accompanying 2,400-volt generators that generate 3.8 gigawatt-hours (GWh) annually. The two turbine intakes have trashracks that are 17-feet deep by 21-feet long and constructed of 0.25-inch vertical steel bars, having a clear bar spacing of 1.25 inches.

At some flow levels, operation of the project has a direct influence on the water surface elevation of Black Lake, a 10,130-acre natural lake located 4.3 miles upstream of Alverno dam. Black Lake is not part of the Alverno Project. A 1965 court order directed that Black Lake be maintained at an elevation of 612.2 feet from May 15 through October 31, and 610.2 from December 1 through April 15 with the periods of November 1 to 30 to transition from the summer to winter level and April 15 to May 15 to transition from the winter to summer level. Because the project serves as the hydraulic control for Black Lake at some flow levels, depending on the season, the Alverno Project should be operated to pass more or less than inflow to maintain the water surface elevation of Black Lake at those levels. Within seasonally-occurring operational constraints, the BRLP proposes to operate the project in a non-peaking, modified run-of-river mode.

The BRLP proposes to install a third generating unit that would provide finer-scale control over flows through the project. The third unit would have a hydraulic capacity of 20 to 75 cubic feet per second (cfs), which would enable the BRLP to provide flows downstream of the project on a more continuous basis than what is currently possible with the existing turbines.

WATER QUALITY CERTIFICATION

Under Section 401(a)(1) of the Clean Water Act (CWA),[3] the Commission may not issue a license for a hydroelectric project unless the state water quality certifying agency has issued a water quality certification (WQC) for the project or has waived certification. Section 401(d) of the CWA provides that state certification shall become a condition on any federal license or permit that is issued.[4] Only a reviewing court can revise or delete these conditions.[5]

On April 16, 1999, the BRLP requested a WQC for the Alverno Project from the MDEQ, as required by Section 401 of the CWA. On March 21, 2000, the MDEQ issued the WQC for the project, subject to 23 conditions pertaining to project operations, measures to maintain water quality, erosion control, debris removal, and monitoring. The WQC is attached to this order as Appendix A, and is made part of this license (see ordering paragraph F).

THREATENED AND ENDANGERED SPECIES

Section 7(a) of the Endangered Species Act of 1973 (ESA)[6] requires federal agencies to ensure that their actions are not likely to jeopardize the existence of federally listed threatened and endangered species, or result in the destruction or adverse modification of designated critical habitat. No federally listed threatened, endangered, or proposed species occur within the Alverno Project area, and therefore, further consultation per the Endangered Species of Act of 1993, as amended, is not needed.[7]

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[3]33 U.S.C. § 1341(a)(1).

[4]33 U.S.C. § 13419d).

[5]See American Rivers v. FERC, 129 F.3d 99 (D.C. Cir. 1997).

[6]16 U.S.C. § 1536(a).

[7]See letter from Michael T. Chezik, Regional Environmental Officer, U.S. Department of the Interior, Office of the Secretary, Philadelphia, March 27, 2000.

FISHWAY PRESCRIPTIONS

Section 18 of the FPA[8] provides that the Commission shall require construction, maintenance, and operation by the licensee of such fishways as the Secretaries of the U.S. Department of Commerce and of the Interior may prescribe. By letter filed March 28, 2000, Interior requested a reservation of authority to prescribe fish passage for the project. Article 401 of this license reserves the Commission's authority to require fishways that may be prescribed by Interior for the Alverno Project.

RECOMMENDATIONS OF FEDERAL AND STATE FISH AND WILDLIFE AGENCIES

Section 10(j)(1) of the FPA[9] requires the Commission, when issuing a license to include conditions based upon recommendations of federal and state fish and wildlife agencies submitted pursuant to the Fish and Wildlife Coordination Act,[10] to "adequately and equitably protect, mitigate damages to, and enhance, fish and wildlife (including related spawning grounds and habitat)" affected by the project. If the Commission believes that any such recommendations may be inconsistent with the purpose and requirements of Part 1 of the FPA, or other law, Section 10(j)(2) of the FPA requires the Commission and the agencies to attempt to resolve such inconsistencies, giving due weight to the recommendations, expertise, and statutory responsibilities of such agencies. If the Commission still does not adopt a recommendation, it must explain how the recommendation is inconsistent with Part 1 of the FPA or other applicable law and how the conditions imposed by the Commission adequately and equitably protect, mitigate damages to, and enhance fish and wildlife resources.

Interior and MDNR filed recommendations for license conditions that were considered in the Section 10(j) process in this proceeding.[11] I am including in this license conditions based on the agencies' recommendations, including requirements

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[8]16 U.S.C. § 803(j)(1).

[9]16 U.S.C. § 803(j)(1).

[10]16 U.S.C. § 661 et seq.

[11]See letter dated March 27, 2000, for Interior's recommendations submitted under Section 10(j) of the FPA. See letter dated March 24, 2000, for MDNR's recommendations submitted under Section 10(j) of the FPA.

relating to: maintaining state water quality standards for dissolved oxygen concentrations and water temperatures at the project (Article 402); a water quality monitoring plan (Article 403); water surface elevations for Black Lake (Article 404); limiting Black Lake water surface elevation fluctuations (Article 404); modified run-of-river operation (Article 404); gaging and flow compliance plan (Article 405); recording headwater elevations of Alverno impoundment and Black Lake (Article 405); installing a staff gage on the upstream wall of the dam (Article 405); recording project operations, including turbine operations (Article 405); documenting three years of compliance with operating standards (Article 405), a maintenance drawdown plan (Article 407); passing river inflow immediately through the project in the event of a shutdown (Article 408); a woody debris passage protocols (Article 412), a nuisance plant monitoring plan (Article 415), a and wildlife management plan (Article 413).

In the DEA, the Commission staff made a determination that the recommendations made by Interior and MDNR to operate the project in an instantaneous run-of-river mode at all times, install flow gages upstream and downstream of Alverno dam, and monitor compliance with run-of-river operations by having no more than a 10 percent difference in discharge upstream and downstream of the project, and to maintain a minimum flow downstream of the project of 75 cfs between inflows of 75 and 245 cfs were potentially inconsistent with the requirements of the FPA.

In letters dated November 8, 2000, the Commission staff sought to resolve the apparent inconsistencies regarding Interior's and MDNR's four recommendations. In a letter dated November 16, 2000, commenting on the DEA, MDNR disagreed with the Commission staff recommendations.

On January 31, 2001, the Commission staff convened a Section 10(j) teleconference with representatives from the U.S. Fish and Wildlife Service (FWS) and the MDNR in an attempt to resolve the apparent inconsistencies of their recommendations with the FPA.

Commission staff and the MDNR resolved issues related to project operations, recommended minimum flows, and Black Lake water surface elevations. The MDNR acknowledged that the highest priority with regard to project operations is to maintain water surface levels in Black Lake at an elevation of 612.2 feet from May 15 through October 31, and 610.2 from December 1 through April 15 with the periods of November 1 to 30 to transition from the summer to winter level and April 15 to May 15 to transition from the winter to summer level. The release of 75 cfs minimum flows, when inflows are between 75 and 245 cfs, along with the potential to operate the project in a run-of-river mode as often as possible, are both contingent on first ensuring Black Lake is

within seasonal limits. The MDNR clarified that at inflows of less than 75 cfs, the applicant could use the low flow turbine to maintain minimum flows downstream of the project. Based on the MDNR's clarification, staff concludes that the operational scenario recommended for the Alervno Project is not inconsistent with the FPA.

Commission staff and Interior were unable to resolve the Section 10(j) inconsistencies as follows:

1. Operate project in an instantaneous run-of-river mode

Interior's recommendation to operate the project in an instantaneous run-of-river mode at all times (with no hydro peaking) would cause Black Lake water surface elevations to range outside the seasonal limits and have negative effects on habitat for fish and aquatic resources. I have included in this license a condition that requires the licensee to operate the project in a run-of-river mode except as necessary to maintain Black Lake at an elevation of 612.2 feet from May 15 through October 31, and 610.2 from December 1 through April 15 with the periods of November 1 to 30 to transition from the summer to winter level and April 15 to May 15 to transition from the winter to summer level (Article 404).

2. Install flow gaging stations upstream and downstream of the dam.

Interior's recommendation to construct, maintain, and fund USGS flow gaging stations upstream and downstream of Alverno dam to measure inflow and discharge is not necessary, because compliance with the recommended operating regime will be determined using water surface elevation data from Black Lake and Alverno impoundment and project operations data. Therefore, I have included in this license a condition that requires the licensee to develop, in consultation the MDEQ, MDNR, and FWS, a gaging and flow compliance plan (Article 405).

3. Comply with run-of-river operations by maintaining no more than 10 percent difference in discharge upstream and downstream of the project.

Interior's recommendation to maintain compliance with run-of-river operation by having no more than a 10 percent difference in discharge upstream and downstream of the project is unnecessary, because we do not recommend a strict run-of-river operation for the project because it would have significant adverse effects on fish and aquatic resources in Black Lake. I have included in this license a condition that requires the licensee to operate the project in a run-of-river mode except as necessary to maintain Black Lake at an elevation of 612.2 feet from May 15 through October 31, and 610.2

from December 1 through April 15 with the periods of November 1 to 30 to transition from the summer to winter level and April 15 to May 15 to transition from the winter to summer level (Article 404) and a condition that requires the licensee to develop, in consultation the MDEQ, MDNR, and FWS, a gaging and flow compliance plan (Article 405).

OTHER ISSUES

A. Administrative Conditions

Section 10(e) of the FPA[12] provides that the Commission shall assess licensees annual charges to reimburse the United States' costs of administrating Part 1 of the FPA. When the Commission issues a license for a pre-1935 project that has been operating without FPA authorization despite its location on a navigable water of the United States,[13] it also assesses the licensee an amount equal to the annual charges that would have been assessed from the earlier of April 1, 1962,[14] or the date of finding that the river on which the project is located is navigable at the project site. The project was determined to be jurisdictional based upon the navigability of the Black River on April 20, 1994. The Commission has not assessed annual charges for projects less than 1,500kW authorized installed capacity since October 1, 1994. The authorized installed capacity for this project is 1,000 kW , therefore, under current regulations no annual administrative charge will be assessed.

B. Cultural Resources

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[12]16 U.S.C. § 803(e).

[13]Section 23(b)(1) of the FPA, 16 U.S.C. § 817(1), requires the licensing of any hydroelectric project that is, inter alia, located on navigable waters of the United States, as that term is defined in FPA Section 3(8), 16 U.S.C. § 796(8).

[14]This is the date of the Federal Power Commission's order in Public Service Company of New Hampshire, 27 FPC 830 (1962), which established a new policy governing license terms and back charges for existing, unlicensed projects on navigable waterways. The Commission considered the law on navigability to have become well settled two decades earlier, such that project operators should have known by then whether their projects were located on navigable waters and therefore required licenses. For a fuller explanation, see City of Danville, 58 FERC ¶ at p. 62,017 (1992).

The Michigan State Historic Preservation Officer concludes that no cultural resources listed or eligible for inclusion in the Nation Register of Historic Places are known in the project area and that the project would have no effect on such resources. However, Article 415 of this license order provides guidance and protection if archeological or historic sites are discovered during: (1) upgrading recreation facilities; and (2) the future operation and maintenance of the project.

C. Project Boundary Map

Minor license applicants are not required to file a project boundary map delineating the project works such as the dam, powerhouse, and reservoir. Included in the application for license is an Exhibit G, showing a proposed project boundary. The applicant, by letter dated July 31, 2000, stated that the Exhibit G included with the license application is in error and submitted a revised Exhibit G with no project boundary. However, in this case recreation facilities are located within the project reservoir, and erosion control measures and wildlife habitat enhancement measures are required by this license to protect and enhance resources located within the project reservoir. Since the project reservoir is needed to accomplish project purposes, including recreation and environmental resources resource protection, it should be enclosed within a project boundary. A project boundary line would assist in establishing the project lands, and help to identify the lands necessary to enhance resources in the project area as required by Articles 411, 413, 414, 415, and 416 . Therefore, in order to simplify the identification and administration of project lands for project purposes, I am approving the Exhibit G, which includes a project boundary, filed with the license application.[15]

CONSISTENCY WITH COMPREHENSIVE PLANS

Section 10(a)(2)(A) of the FPA[16] require the Commission to consider the extent to which a hydroelectric project is consistent with federal and state comprehensive plans for improving, developing, or conserving waterways affected by the project.[17] Under Section 10(a)(2)(A), federal and state agencies filed 55 comprehensive plans that address various

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[15]See Northern States Power Company, 75 FERC ¶ 61,136 (1996), where the Commission required a project boundary, enclosing project lands needed for a specified project purpose at a minor project.

[16]16 U.S.C. § 803(a)(2)(A).

[17]Comprehensive plans for this purpose are defined at C.F.R. § 2.19 (1997).

resources in Michigan. Of these, the Commission staff identified and reviewed one plan relevant to this project.[18]

COMPREHENSIVE DEVELOPMENT

In determining whether a proposed hydroelectric power project will be best adapted to a comprehensive plan for developing a waterway for beneficial public uses, pursuant to section 10(a)(1), the Commission considers a number of public interest factors, including the projected economic benefits of project power.

Under the Commission's approach to evaluating the economics of hydroelectric projects, as articulated in Mead Corp.,[19] the Commission employs an analysis that uses current costs to compare the costs of the project and likely alternative power, with no forecasts concerning potential future inflation, escalation, or deflation beyond the license issuance date. The basic purpose of the Commission's economic analysis is to provide a general estimate of the potential power benefits and the costs of a project, and of reasonable alternatives to the power. The estimate helps to support an informed decision concerning what is in the public interest with respect to a proposed license. In making the decision, the Commission considers the project power benefits both with the applicant's proposed measures and with the Commission's modifications and additions to the applicant's proposal.

As proposed by BRLP, the project would produce an average of 4,000 megawatt hours (MWh) of energy annually at an annual cost of about $85,000 or about 21.32 mills per kilowatt-hour (mills/kWh). The annual value of the power would be about $34,000 or about 8.45 mills/kWh.[20]

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[18]Michigan Department of Natural Resources. Recreation Division. 1991. 1991-1996 Michigan recreation plan. Lansing, Michigan 28pp. and appendices.

[19]72 FERC ¶ 61,027 (1995).

[20]Our estimate of the cost of alternative power is based on the current cost of energy generation in natural gas-fueled combined cycle combustion turbine (CCCT) generating plants in the East Central Area Reliability Coordination Agreement region, plus a value of $109 per kilowatt year for the project's average annual capacity of 1,000 kW. We compute the regional energy value to be 17.34 mills/kWh and the capacity value to be 12.43 mills/kWh, for a total power value of 29.77 mills/kWh. Our estimate of the energy value is based on the cost of fuel that would be displaced by the

(continued...)

As licensed with staff recommended measures, the project would produce an average of 4,000 MWh of energy annually at an annual cost of about $87,000 or about 21.80 mills/kWh. The annual power would be about $32,000 or about 7.96 mills/kWh. To determine if the project would be economically beneficial, we subtract the project's cost from the value of the project's power. Thus, the project's power would cost about $32,000 less than currently available alternative power.

In analyzing public interest factors, the Commission takes into account that hydroelectric projects offer unique operational benefits to the electric utility system (ancillary benefits). These include their value as almost instantaneous load-following response to dampen voltage and frequency instability on the transmission system, system-power-factor-correction through condensing operations, and a source of power available to help in quickly putting fossil-fuel based generating stations back on line following a major utility system or regional blackout.

Ancillary benefits are now mostly priced at rates that recover only the cost of providing the electric service at issue, which do not resemble the prices that would occur in competitive markets. As competitive markets for ancillary benefits begin to develop, the ability of hydro projects to provide ancillary services to the system will increase the benefits of the projects.

Based on our independent review and evaluation of the Alverno Project, recommendations from the resource agencies and other stakeholders, and no-action as documented in the FEA, I have selected the Alverno Project, with the staff-recommended measures, as the preferred alternative.

I selected this alternative because: (1) issuance of an original license would provide a beneficial, dependable, and an inexpensive source of electric energy; (2) the required mitigation measures would protect and enhance fish and wildlife resources, water quality, recreation and cultural resources; and (3) the 1,000-kW electric energy generated from renewable resources would continue to offset the use of fossil-fueled,

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[20](...continued)
hydroelectric generation in a natural gas-fueled CCCT generating plant, operating at a heat rate of 6,200 Btu/kWh. We estimate the cost of fuel based on the Energy Information Administration's reference-case estimate of average real fossil fuel costs for electric utilities, as published by the Energy Information Administration (EIA) in their Annual Energy Outlook for 1998 and its supplemental data on the EIA Internet Homepage.

steam-electric generating plants, thereby conserving nonrenewable resources and reducing atmospheric pollution.

The preferred alternative includes the following measures:

(1) reserve authority for the Secretary of the Interior to prescribe the construction, operation, and maintenance of fishways (Article 401).

(2) operate the Alverno Project in a manner consistent with the State of Michigan's water quality standards set forth in the Water Quality Certificate (Article 402);

(3) in consultation with the resource agencies, develop and implement a water quality monitoring program the fifth year after license issuance and every five years thereafter (Article 403);

(4) operate the project in a modified run-of-river mode to maintain the water surface elevation of Black Lake within an elevation of 612.2 feet from May 15 through October 31, and 610.2 from December 1 through April 15 with the periods of November 1 to 30 to transition from the summer to winter level and April 15 to May 15 to transition from the winter to summer level (Article 404);

(5) develop and implement a gaging and flow compliance monitoring plan, in consultation with the resource agencies, including monitoring Black Lake water surface elevation, Alverno impoundment water surface elevation, and project operations (Article 405);

(6) develop and implement a plan to monitor flow of the Black River downstream of the dam (Article 406);

(7) develop and implement a reservoir drawdown management plan, in consultation with the resources agencies, to prevent adverse effects on aquatic resources from planned reservoir drawdowns for project maintenance (Article 407);

(8) develop and implement provisions to immediately provide flow to downstream reaches in the event of a project shutdown (Article 408);

(9) cooperate with the resource agencies and nongovernmental organizations in the management of lake sturgeon in the Black River (Article 409);

(10) consult with resource agencies before undertaking any activities which may cause a significant mobilization of sediments (Article 410);

(11) develop and implement a shoreline erosion control plan, in consultation with the resource agencies, for the Alverno impoundment (Article 411);

(12) develop and implement a natural organic debris management plan, in consultation with the resource agencies, focusing on passing debris downstream of the project, to enhance habitat resources in the Black River (Article 412);

(13) develop and implement a wildlife management plan, in consultation with the resource agencies, focusing on nesting structures, habitat enhancement, and vegetation management (Article 413);

(14) development and implement a recreation management plan, in consultation with the MDNR, focusing on enhancing existing facilities (Article 414);

(15) develop and implement a plan to monitor purple loosestrife *(Lythrum salicaria)* and Eurasian water-milfoil *(Myriophyllum spication)* in consultation with the resource agencies (Article 415); and

(16) consult with the SHPO in case archeological or historic sites are discovered (Article 416);

LICENSE TERM

Section 6 of the FPA[21] provides that original licenses for hydropower projects shall be issued for a term not exceeding 50 years. The Commission's license term policy when issuing original licenses for existing projects that should have been licensed earlier is set forth in *City of Danville*.[22] We issue a 30-year license for projects with little or no redevelopment, new construction, or new environmental mitigation and enhancement measures; a 40-year license for projects with a moderate amount of such activities; and a 50-year license for projects with extensive measures.

This license authorizes a moderate amount of new environmental mitigation measures and new construction relative to the size of the project. Accordingly, I issue

[21] 16 U.S.C. § 799.

[22] 58 FERC ¶ 61,318 at pp. 62,020-21 (1992).

this license for a term of 40 years, effective the first day of the month the license is issued.

SUMMARY OF FINDINGS

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 final EA, which is attached to and made part of this license 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 constructed, operated and maintained in accordance with the requirements of this license.

The Director orders:

(A) This license is issued to Black River Limited Partnership (licensee) for a period of 40 years, effective the first day of the month in which this license is issued, to construct, operate, and maintain the Alverno Hydroelectric Project. This license is subject to the terms and conditions of the Federal Power Act (FPA), which is incorporated by reference as part of this license, and subject to the regulations the Commission issues under the provisions of the FPA.

(B) The project consists of:

(1) All lands, to the extent of the licensee's interest in those lands, shown by Exhibit A and Exhibit G filed April 21, 1999.

(2) Project works consisting of: (1) a powerhouse located on the eastern riverbank that is integral with a 360-foot-long earth-filled dam; (2) a dam that includes a concrete spillway with a 16-foot high radial gate; (3) a reservoir with a normal surface area of 80 acres and a gross storage capacity of 480 acre-feet; (4) a 76-foot by 46-foot concrete powerhouse containing two horizontal, 6-foot diameter propeller turbines and accompanying 2,400-volt generators; and (4) two turbine intakes with trashracks that are 17-feet deep by 21-feet long and constructed of 0.25-inch vertical steel bars, having a clear bar spacing of 1.25 inches. A three-foot wide abandoned log chute and fish ladder is located adjacent to the spillway.

The project works generally described above are more specifically described in Exhibit A of the application (Figures F-1, F-2, F-3, and F-4).

Exhibit F Drawing	FERC No.	Description
Sheet F-1	11730-1	Site Plan
Sheet F-2	11730-2	Powerhouse Plan
Sheet F-3	11730-3	Powerhouse Section
Sheet F-4	11730-4	Dam Elevation & Spillway Section

(3) Exhibit G: The following exhibit G filed April 21, 1999:

Exhibit G Drawing	FERC No.	Showing
Sheet G-1	11730-5	Project Map and Boundary

(4) 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 exhibits A, F, and G as designated above are approved and made part of this license.

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

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

(E) This license is subject to the articles set forth in Form L-9 (October 1975), entitled "Terms and Conditions of License for Constructed Minor Project Affecting Navigable Water of the United States," and the following additional articles:

(F) This license is subject to the water quality certification conditions submitted by the Michigan Department of Environmental Quality pursuant to Section 401(a) of the Clean Water Act, as those are set forth in Appendix A to this order.

Article 201. The licensee shall pay the United States an annual charge, effective as of the date of commencement of project construction, for the purpose of reimbursing the United States for the cost of administering Part I of the FPA, as determined by the Commission. The authorized installed capacity for that purpose is 1,100 kilowatts (kW). Under regulations currently in effect, projects with authorized capacity of less than or equal to 1,500-kW are not assessed an annual charge.

Article 202. Within 90 days of the issuance date of this order, the licensee shall file three sets of aperture cards of the approved drawings. The aperture cards should be reproduced on silver microfilm. All microfilm should be mounted on a Type D (3 1/4" x 7 3/8") aperture card.

Prior to microfilming, the FERC Drawing Number (11730-1 through -4) shall be shown in the margin below the title block of the approved drawings. After mounting, the FERC Drawing Number should be typed in the upper right corner of each aperture card. Additionally, the Project Number, FERC Exhibit (e.g. F-1, G-1, etc.), drawing title, and date of this order should be typed on the upper left corner of each aperture card. See Figure 1.

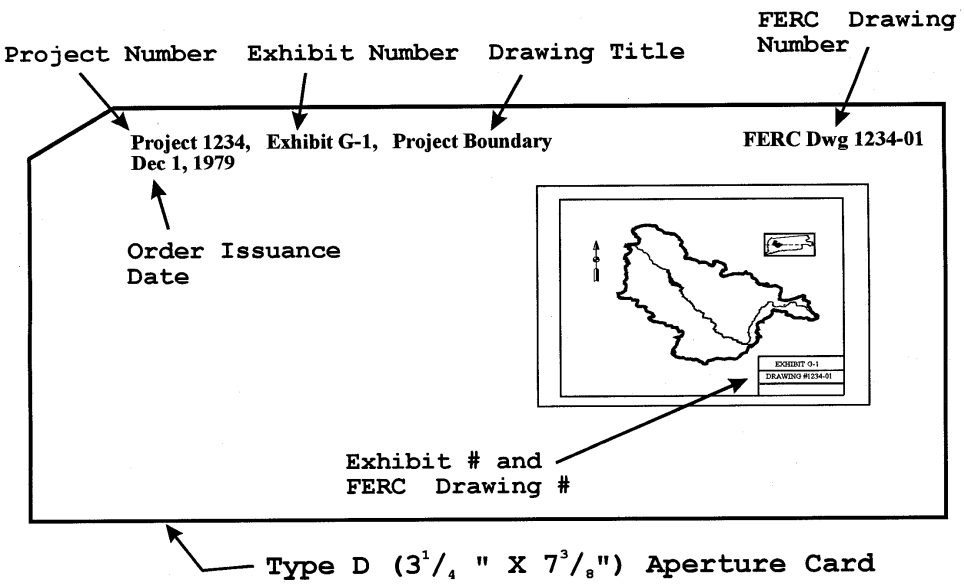

Figure 1. Sample Aperture Card Format

Two sets of aperture cards should be filed with the Secretary of the Commission. The remaining set of aperture cards should be filed with the Commission's Chicago Regional Office.

Article 203. If the licensee's project is directly benefitted by the construction work of another licensee, a permittee or the United States of a storage reservoir or other headwater improvement, the licensee shall reimburse the owner of the headwater improvement for those benefits, at such time as they are assessed. The benefits will be assessed in accordance with Subpart B of the Commission's regulations.

Article 301. Before starting construction, the licensee shall review and approve the design of contractor-designed cofferdams and deep excavations, and shall make sure construction of cofferdams and deep excavations is consistent with the approved design. At least 30 days before starting construction of the cofferdam, the licensee shall submit one copy to the Commission's Regional Director and two copies to the Commission (one of these copies shall be a courtesy copy to the Commission's Director, Division of Dam Safety and Inspections), of the approved cofferdam construction drawings and specifications and the letters of approval.

Article 302. The licensee shall, at least 60 days prior to the start of construction, submit one copy to the Commission's Regional Director and two copies to the Commission (one of these shall be a courtesy copy to the Director, Division of Dam Safety and Inspections), of the final contract drawings and specifications for pertinent features of the project, such as water retention structures, powerhouse, and water conveyance structures. Included in the plans and specifications submittal will be a soil erosion control plan. The Commission may require changes in the plans and specifications to assure a safe and adequate project.

If the licensee plans substantial changes to location, size, type, or purpose of the water retention structures, powerhouse, or water conveyance structures, the plans and specifications must be accompanied by revised Exhibit F and G drawings.

Article 303. The licensee shall complete an Independent Consultant's Inspection of the project facilities in accordance with Part 12, Subpart D of the Commission's Regulations within one year after receiving a license. The 2-year filing time requirement under §12.38(b) of the Commission's Regulations is hereby changed to one year for the Alverno Project.

Article 304. The licensee shall commence construction of the project works within two 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 305. Within 180 days of the completion of construction of the project works authorized by this license, the licensee shall file for Commission approval revised Exhibits A, F, and G which describe and show the project facilities "as-built".

Article 401. 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 under Section 18 of the Federal Power Act.

Article 402. The licensee shall maintain the following state water quality standards for water temperature and dissolved oxygen (DO) at the Alverno Project as follows:

(a) the licensee shall not warm the Black River downstream of the Alverno Project, by operation of the project, to temperatures in degrees Fahrenheit higher than the following monthly average temperatures:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
38	38	41	56	70	80	83	81	74	64	49	39

These monthly average water temperature standards shall not apply when the natural water temperature of the Black River as measured upstream of the Alverno impoundment exceed the above monthly average water temperature values.

(b) the licensee shall not cause the dissolved oxygen (DO) concentration measured in the Black River downstream of the Alverno Project to be less than 5.0 milligrams per liter (mg/l) at any time. This DO concentration standard shall not apply when the DO of the Black River as measured upstream of the Alverno impoundment is less than 5.0 mg/l; and

(c) in the event that any of the water quality limitations are not met, or if conditions change to indicate that they may not be met, the licensee shall immediately notify the Cadillac District Supervisor of the Michigan Department of Environmental Quality, and take all practical steps, including appropriate monitoring, to achieve compliance and minimize impacts on downstream waters.

Article 403. The licensee shall monitor water quality and related chemical parameters at the Alverno Project as follows:

(a) monitor water temperature and dissolved oxygen (DO) of the Black River from June 1 through September 30 at representative locations upstream of the impoundment and immediately downstream of the Alverno Project, beginning five years after license issuance and every five years thereafter, with the monitoring frequency determined in consultation with the Michigan Department of Environmental Quality (MDEQ);

(b) during the years when water temperature and DO are monitored, the licensee shall also measure the water temperature and DO profile in the deepest part of the impoundment every two weeks from June through September. Measurements shall be made at 0.5 meter increments or less. Secchi disk depth measurements shall be made at the same time as the profiling;

(c) ten years after license issuance and every ten years thereafter, the licensee shall analyze the sediments in the Alverno impoundment for the following parameters: oil and grease; total cadmium; total copper; total mercury; total organic carbon; total selenium; total zinc; total polychlorinated biphenyls; total arsenic; total chromium; total lead; total mercury; total nickel; total phosphorus; total silver; and acid volatile sulfides; and

(d) all measurements of water quality shall use methods approved by the U.S. Environmental Protection Agency Pursuant to 40 C.F.R. § 136 or methods approved by the MDEQ. All sampling locations, sampling methods, and analytical methods shall be determined in consultation with the MDEQ.

The licensee shall prepare an annual report of the data generated in items (a) - (d) (as applicable) to be submitted to the MDEQ and the Michigan Department of Natural Resources within three months of completing sampling. The report shall include a summary of quality insurance data.

Within 60 days of filing the annual report to the aforementioned resource agencies, the licensee shall file a copy of the annual report with the Commission, to include comments of the resource agencies on water quality monitoring activities, results of activities, and any agency-recommended changes to water quality sampling. The agencies should be provided 30 days to provide comments on the annual report, before submission of the report to the Commission. The Commission reserves the right to amend the water quality sampling program pending the submission of annual reports from the licensee.

The licensee shall file, within one year of license issuance, for Commission approval, a water quality monitoring plan, to include a description of methods for water quality monitoring and a description of provisions for chemical analysis, itemized above.

The licensee shall prepare the plan after consultation with the U.S. Fish and Wildlife Service, the Michigan Department of Natural Resources, and the Michigan Department of Environmental Quality. The licensee shall include with the plan documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the agencies, and specific descriptions of how the agencies' comments are accommodated by the plan. The licensee shall allow a minimum of 30 days for the agencies to comment and to make recommendations before filing the plan with the Commission. If the licensee does not adopt a recommendation, the filing should include the licensee's reasons, based on project-specific information.

The Commission reserves the right to require changes to the plan. Upon Commission approval, the licensee shall implement the plan, including any changes required by the Commission.

Article 404. The licensee shall operate the project in a run-of-river (R-O-R) mode for the protection of water quality, aquatic and recreational resources of the Alervno

Project and the Black River, except as necessary to maintain Black Lake at an elevation of 612.2 feet from May 15 through October 31, and 610.2 from December 1 through April 15 with the periods of November 1 to 30 to transition from the summer to winter level and April 15 to May 15 to transition from the winter to summer level, and except as provided for in item (a) below. Run-of-river means the instantaneous flow through the dam shall approximately equal the instantaneous impoundment inflow as monitored by impoundment elevations and streamflow downstream of the project.

(a) when there are more than 75 cubic feet per second (cfs) but less than 245 cfs available to operate the turbines, the Alverno Project may be operated in a limited store and release mode. During the limited store and release mode of operation, the licensee shall: (1) maintain Black Lake at an elevation of 612.2 feet from May 15 through October 31, and 610.2 from December 1 through April 15 with the periods of November 1 to 30 to transition from the summer to winter level and April 15 to May 15 to transition from the winter to summer level; (2) minimize the frequency and magnitude of turbine flow release changes; and (3) provide a minimum flow release from the turbines of at least 75 cfs.

Article 405. The licensee shall file, within 180 days of license issuance, for Commission approval, a gaging and flow compliance plan to monitor the modified run-of-river (R-O-R) operating mode required by Article 404. The plan shall include, at a minimum, measures to implement the following:

(a) install a calibrated staff gage in the Alverno impoundment at a location clearly visible to the public that shows the impoundment level referenced to the National Geodetic Vertical Datum;

(b) record the water surface elevation of the Alverno impoundment on an hourly basis using the staff gage or automated water surface elevation sensor (item d);

(c) record the water surface elevation of Black Lake on an hourly basis using an existing or installed automated water surface elevation sensor;

(d) install an automated water surface elevation sensor on the Alverno impoundment and record water surface elevation of the impoundment on an hourly basis; and

(e) record project operations data, including turbine start-up and shutdown times, and flows associated with project features.

The flow and operations monitoring plan shall also include: (1) a timetable for consulting with resource agencies regarding the installation of the recommended monitoring equipment; (2) protocols for recording monitoring data, such as pond elevations and turbine flows; (3) provisions for maintaining and filing a log of naturally-occurring high flow and ice jams that may hinder compliance with project operations; and (4) a timetable for telemetering monitoring equipment or making gage data accessible in electronic form.

The licensee shall prepare the plan after consultation with the Michigan Department of Environmental Quality (MDEQ), Michigan Department of Natural Resources (MDNR), and the U.S. Fish and Wildlife Service. The licensee shall include with the plan documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the agencies, and specific descriptions of how the agencies' comments are accommodated by the plan. The licensee shall allow a minimum of 30 days for the agencies to comment and to make recommendations before filing the plan with the Commission. If the licensee does not adopt a recommendation, the filing should include the licensee's reasons, based on project-specific information. The Commission reserves the right to require changes to the plan. Upon Commission approval, the licensee shall implement the plan, including any changes required by the Commission.

On a semi-annual basis following approval of the plan, the licensee shall file with the Commission, and consulted resource agencies, a summary of all monitoring data, including staff gage readings, water surface elevation of the Alverno impoundment and Black Lake, and project operations data as specified above. The licensee shall also file an annual report of all monitoring data and submit the report to the MDNR. The licensee shall allow the MDNR a minimum of 30 days to comment on the report before filing the report with the Commission.

The licensee shall be given a three-year test period beginning after the gaging and flow monitoring plan is implemented, to determine the licensee's ability to comply with the operations requirements outlined in this Article. Within 90 days after the end of the three-year test period, the licensee shall prepare a report, in cooperation with the MDNR and MDEQ, and submitted to the MDEQ, which documents the licensee's ability to comply with the project operations requirements identified in this Article. If the report indicates that the licensee is not able to comply with all of the project operations requirements outlined in this Article, the licensee shall, in cooperation with the MDNR and MDEQ, develop a plan of action and implementation schedule to meet those requirements.

During adverse conditions when the project operations requirements outlined in this article cannot be met, the licensee shall, within one business day, consult with the MDNR and the Cadillac District Supervisor for the MDEQ, Surface Water Quality Division, regarding emergency actions taken or planned. Consultation during the adverse conditions shall continue following a mutually agreed upon schedule. Upon cessation of the adverse condition, the licensee shall resume the normal operations.

Article 406. The licensee shall, within one year of license issuance, provide a plan for approval by the Michigan Department of Environmental Quality, in consultation with the Michigan Department of Natural Resources (MDNR), to monitor flow of the Black River downstream of Alverno dam. This plan shall contain a timetable for implementation of monitoring within one full construction season after plan approval, annual submission of summary results to the MDNR, and a provision for submission of all data upon request.

Article 407. At least 90 days before undertaking any planned drawdowns of the Alverno Project impoundment for construction or operations and maintenance purposes, the licensee shall file notification of the planned drawdown with the Commission.

The licensee shall consult with the U.S. Fish and Wildlife Service (FWS) and the Michigan Department of Natural Resources (MDNR). The licensee shall provide a minimum of 30 days for the FWS and MDNR to comment on any planned reservoir drawdown. The licensee shall file with the notification, a summary of resource agency comments, including how comments were addressed. If the licensee does not adopt a recommendation, the filing should include the licensee's reasons, based on project-specific information. The Commission reserves the right to modify procedures for planned reservoir drawdowns.

Article 408. The licensee shall provide downstream flow immediately in the event of a project shutdown.

Article 409. To protect and enhance lake sturgeon and lake sturgeon habitat in the Black River basin the licensee shall cooperate with the Michigan Department of Natural Resources (MDNR), the U.S. Fish and Wildlife Service (FWS), and non-governmental organizations on lake sturgeon management in the Black River basin. The licensee shall engage in reasonable measures to minimize any potential adverse effects of operating the Alverno Project on lake sturgeon or lake sturgeon habitat. If at any time the licensee, the MDNR and FWS, are unable to agree upon reasonable measures necessary to minimize adverse effects to lake sturgeon or lake sturgeon habitat, the licensee shall immediately notify the Commission of the disagreement, the reason(s) given for needing licensee

action to minimize adverse effects, the measures proposed for minimizing adverse effects and the licensee's reasons why these measures are not needed and/or the licensee's proposed measures for minimizing adverse effects to lake sturgeon and/or lake sturgeon habitat. The Commission will then determine whether reasonable measures to minimize adverse effects are needed and/or what measures the licensee shall take to support lake sturgeon management.

The licensee, in consultation with the MDNR and FWS, shall file annual status reports with the Commission, beginning one year after license issuance, outlining any reasonable measures undertaken by the licensee to minimize any adverse effects to lake sturgeon or lake sturgeon habitat and/or to support lake sturgeon management in the Black River basin. The annual status reports shall be filed with the Commission by October 1 of each year, and shall include a description of the activities engaged in the previous year and any expected activities to be engaged in during the upcoming year.

Article 410 Before conducting any construction activities that may mobilize significant sediment loads, the licensee shall consult with the Michigan Department of Natural Resources (MDNR) and the U.S. Fish and Wildlife Service (FWS) on best management practices to minimize the disturbance and suspension of sediments.

The licensee shall allow a minimum of 30 days for the MDNR and FWS to comment and to make recommendations on best management practices before filing the summary of consultation with the Commission. If the licensee does not adopt a recommendation, the filing should include the licensee's reasons, based on project-specific information. The Commission reserves the right to modify plans for minimizing sediment loading.

Article 411. The licensee shall, within three years of license issuance, develop and implement a plan to remediate stream and reservoir bank erosion sites that are caused by the Alverno Project. Prior to implementation, the plan shall be approved by the Michigan Department of Environmental Quality (MDEQ), in consultation with the Michigan Department of Natural Resources (MDNR). The plan shall include a determination of the area of influence by the Alverno Project, an erosion site inventory, an assessment of reasonable erosion control alternatives available for each site, and implementation dates for the erosion control option(s) selected for each site. The plan shall include a mechanism for the licensee to identify and control future erosion problems caused by the Alverno Project.

Article 412. The licensee shall, within one year of license issuance, develop and with the approval of the Michigan Department of Environmental Quality and the

Michigan Department of Natural Resources, implement a program to pass natural vegetative debris (logs, stumps, sticks, limbs, leaves and aquatic vegetation) collected on the trash racks and log booms over the Alverno Dam in a manner which will not create a navigation hazard. The licensee shall remove and properly dispose of all other materials collected in the trash racks and spill gates.

Article 413. The licensee shall file, within 180 days of license issuance, for Commission approval, a wildlife management plan. The plan shall include, but not be limited to the following:

(a) Install and maintain nesting boxes or platforms for wood duck, mallard, purple martin, bat, bluebird, owl and kestrel, osprey, as determined during consultation;

(b) monitor wildlife populations using nesting structures and maintain structures annually;

(c) promote the use of native grasses when opportunities for re-vegetation occur;

(d) maintain licensee's existing ownership of lands within the project; and

(e) an implementation schedule and map showing the location for the installation of the various artificial nesting structures.

The licensee shall prepare the plan after consultation with the U.S. Fish and Wildlife Service (FWS) and the Michigan Department of Natural Resources (MDNR). The licensee shall include with the plan documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the agencies and specific descriptions of how the agencies' comments are accommodated by the plan. The licensee shall allow a minimum of 30 days for the agencies to comment and to make recommendations before filing the plan with the Commission. If the licensee does not adopt a recommendation, the filing should include the licensee's reasons, based on project-specific information.

If any of the measures prove unsuccessful, the plan shall provide for the inclusion of alternative measures or modifications to measures that are developed in consultation with the FWS and MDNR. Additional measures may be necessary, if bald eagles become established at the project in the future.

The Commission reserves the right to require changes to the plan. Upon Commission approval, the licensee shall implement the plan, including any changes required by the Commission.

Article 414.. The licensee shall file, within 180 days of license issuance, for Commission approval, a recreation plan for providing enhanced recreational opportunities in and around the project site. The plan shall include:

(a) specifics on maintaining the existing recreation facilities;

(b) a signage plan detailing directions for users to access the project facilities;

(c) identification of any construction activities that may mobilize sediment loads, and erosion and sediment control measures to be used during construction of the facilities;

(d) plans to provide additional parking and fishing areas, and a restroom that are accessible for persons with disabilities, and additional downstream shoreline areas for fishing sites, and a canoe portage; and

(e) a schedule for implementing the recreation enhancements.

The licensee shall prepare the plan after consultation with the U.S. Fish and Wildlife Service and the Michigan Department of Natural Resources. The licensee shall include with the plan documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the agencies and specific descriptions of how the agencies' comments are accommodated by the plan. The licensee shall allow a minimum of 30 days for the agencies to comment and to make recommendations before filing the plan with the Commission. If the licensee does not adopt a recommendation, the filing should include the licensee's reasons, based on project-specific information.

The Commission reserves the right to require changes to the plan. Upon Commission approval, the licensee shall implement the plan, including any changes required by the Commission.

Article 415. The licensee shall file, within 12 months of license issuance, for Commission approval, a plan to monitor purple loosestrife *(Lythrum salicaria)* and Eurasian water-milfoil *(Myriophyllum spication)* in project waters. The plan shall include, but not be limited to the following:

(a) a description of the monitoring method;

(b) a monitoring schedule;

(c) a schedule for providing the monitoring results to the U.S. Fish and Wildlife Service (USFWS) and the Michigan Department of Natural Resources (MDNR); and

(d) documentation of agency construction, including copies of comments and recommendations on the completed plan.

The licensee shall prepare the plan after consultation with the USFWS and the MDNR. The licensee shall include with the plan documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the agencies and specific descriptions of how the agencies' comments are accommodated by the plan. The licensee shall allow a minimum of 30 days for the agencies to comment and to make recommendations before filing the plan with the Commission. If the licensee does not adopt a recommendation, the filing should include the licensee's reasons, based on project-specific information.

If at any time during the term of the license, the USFWS or the MDNR demonstrate that purple loosestrife or Eurasian water-milfoil is significantly affecting fish and wildlife populations at the project and that control measures are needed, and that the Commission agrees with those determinations, the Commission may require the licensee to cooperate with the MDNR and the USFWS to undertake reasonable measures to control or eliminate these weeds.

The Commission reserves the right to require changes to the plan. Upon Commission approval, the licensee shall implement the plan, including any changes required by the Commission.

Article 416. If archeological or historic sites are discovered during any future project modification or construction that require land-disturbing activities, or during project operation or maintenance, or if the licensee plans any future modifications, other than routine maintenance, the Licensee shall: (1) consult with Michigan State Historic Preservation Officer (SHPO) about any discovered sites; (2) prepare a cultural resource management plan and a schedule to evaluate the significance of the sites and to avoid or mitigate any impacts to sites found eligible for inclusion in the National Register of Historic Places; (3) base the plan on recommendations of the SHPO and on the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation; (4) file the plan for Commission approval, together with the written comments of the SHPO

documenting consultation and the adequacy of the plan; and (5) take the necessary steps to protect the discovered archeological or historic sites from further impact until notified by the Commission that all of these requirements have been satisfied.

The Commission may require a cultural resources survey and changes to the cultural resources management plan based on the filings. The Licensee shall not implement a cultural resource management plan or begin any land-cleaning or land-disturbing activities in the vicinity of any discovered sites until informed by the Commission that the requirements of this article have been fulfilled.

Article 417. Land Use. (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, canceling 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; (3) embankments, bulkheads, retaining walls, or similar structures for erosion control to protect the existing shoreline; and (4) food plots and other wildlife enhancement. 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 or roads where 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. If no conveyance was made during the prior calendar year, the licensee shall so inform the Commission and the Regional Director in writing no later than January 31 of each year.

(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 (measured over project waters) 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 project waters at normal 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 60 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 the following covenants running with the land: (i) the use of the lands conveyed shall not endanger health, create a nuisance, or otherwise be incompatible with overall project recreational use; (ii) the grantee shall take all reasonable precautions to ensure 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; and (iii) the grantee shall not unduly restrict public access to project waters.

(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.

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

(H) This prder is issued under authority delegated to the Director and is final unless a request for a rehearing is filed within in 30 days from the date of issuance, as provided in Section 313 of the FPA. The filing of a request for a rehearing does not operate as a stay of the effective date of this license or any other date specified in this order, except as specifically ordered by the Commission. The licensee's failure to file a request for rehearing of this order shall constitute acceptance of this license.

J. Mark Robinson
Director
Office of Energy Projects

A-1

APPENDIX A

Michigan Department of Environmental Quality'
Certification Under Section 401 of the Federal Clean Water Act
Alverno Hydroelectric Project, P-11730-000

Certification Conditions:

1.0. Alverno Project - Operational Requirements:

1.1. The Black River Limited Partnership (BRLP) shall, within six months of the FERC license issuance, install a calibrated staff gauge in the Alverno Impoundment at a location clearly visible to the public that shows the impoundment level referenced to the National Geodetic Vertical Datum. The impoundment level and the level of Black Lake shall be recorded hourly. An annual report of all recorded impoundment and Black Lake levels shall be submitted to the Michigan Department of Natural Resources (MDNR).

1.2. Upon FERC license issuance, the BRLP shall operate the Alverno Project in a run-of-river mode except as necessary to maintain Black Lake at court-ordered levels and except as provided for under Section 1.3 of this Certification. Run-of-river means the instantaneous flow through the dam shall approximately equal instantaneous impoundment inflow as monitored by impoundment level elevations and stream flow downstream of the Alverno Project.

1.3. When there are more than 75 cfs but less than 245 cfs available to operate the turbines, the Alverno Project may be operated in a limited store and release mode. During the limited store and release mode of operation, the BRLP shall 1) maintain Black Lake at the court-ordered level, 2) minimize the frequency and magnitude of turbine flow release changes, and 3) provide a minimum flow release from the turbines of at least 75 cfs.

1.4. The BRLP shall, within one year of FERC license issuance, provide a plan for approval by the Michigan Department of Environmental Quality (MDEQ), in consultation with the MDNR, to monitor flow of the Black River downstream of the Alvemo Dam. This plan shall contain a timetable for implementation of the monitoring within one full construction season

after plan approval, annual submission of summary results to the MDNR, and a provision for submission of all data upon request.

1.5. A three-year test period beginning after the flow monitoring plan in Section 1.4 is implemented shall be used to determine the BRLP's ability to comply with the requirements listed in Sections 1.2 and 1.3 of this Certification.

Within 90 days after the end of the three-year test period, a report shall be prepared by the BRLP, in cooperation with the MDNR and the MDEQ, and submitted to the MDEQ, which documents their ability to comply with requirements in Sections 1.2 and 1.3.

If the report indicates that the BRLP is not able to comply with all of the requirements in Sections 1.2 and 1.3, there the BRLP shall, in cooperation with the MDNR and the MDEQ, develop a plan of action and implementation schedule to meet those requirements.

1.6. During adverse conditions when the requirements in Sections 1.2 or 1.3 cannot be met, the BRLP, shall, within one business day, consult with the MDNR and the Cadillac District Supervisor for the MDEQ, Surface Water Quality Division (SWQD), regarding emergency actions taken or planned. Consultation during the adverse conditions shall continue following a mutually agreed upon schedule. Upon cessation of the adverse conditions, the BRLP shall resume the normal operations.

2.0. Alverno Project - Water Quality Limitations:

2.1. The BRLP shall not warm the Black River downstream from the Alverno Project, by operation of the project, to temperatures in degrees Fahrenheit higher than the following monthly average temperatures:

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC
38	38	41	56	70	80	83	81	74	64	49	39

This Section (2.1) shall not apply when the natural temperatures of the Black River measured upstream of the Alverno Impoundment exceed the above monthly average temperature values.

2.2. The BRLP shall not cause the dissolved oxygen (DO) concentration measured in the Black River downstream of the Alverno Project to be less than 5.0 mg/I at any time. This Section (2.2) shall not apply when the DO of the Black River measured upstream of the Alverno Impoundment is less than 5.0 mg/I.

2.3. In the event that any of the water quality limitations listed in Sections 2.1 or 2.2 of this Certification are not met, or if conditions change to indicate that they may not be met, the BRLP shall immediately notify the Cadillac District Supervisor of the MDEQ, SWQD, and take all practical steps, including appropriate monitoring, to achieve compliance and minimize impacts on downstream waters.

3.0. Alverno Project - Water Quality Monitoring and Reporting:

3.1. All measurements of water quality shall use methods approved by the U.S. Environmental Protection Agency pursuant to 40 C.F.R. §136 or methods approved by the MDEQ.

3.2. The BRLP shall monitor the temperature and DO of the Black River from June 1 through September 30 at representative locations upstream of the impoundment and immediately downstream of the Alvemo Project beginning five years after the issuance of the FERC license and every five years thereafter. The monitoring frequency shall be determined in consultation with the MDEQ.

3.3. During the years when DO and temperature are monitored pursuant to Section 3.2 of this Certification, the BRLP shall also measure the temperature and DO profile in the deepest part of the impoundment every two weeks from June through September. Measurements shall be made at 0.5 meter increments or less. Secchi disc depth measurements shall be made at the same time as the profiling.

3.4. Ten years after the issuance of the FERC license, and every ten years thereafter, the BRLP shall analyze the sediments in the Alvemo impoundment for the following parameters:

Oil and Grease	Total Arsenic
Total Cadmium	Total Chromium
Total Copper	Total Lead

Total Mercury	Total Nickel
Total Organic Carbon	Total Phosphorus
Total Selenium	Total Silver
Total Zinc Acid	Volatile Sulfides
Total PCB	

3.5. All sampling locations, sampling methods, and analytical methods shall be determined in consultation with the MDEQ. An annual report of the data generated to comply with Sections 3.1 - 3.4 shall be submitted to the MDEQ and the MDNR within three months of completing the sampling. The report shall include a summary of quality assurance data.

4.0. Alvemo Project - Bank Erosion Control:

4.1. The BRLP shall, within three years of the issuance of the FERC license, develop and implement a plan to remediate stream and reservoir bank erosion sites that are caused by the Alvemo Project. Prior to implementation, the plan shall be approved by the MDEQ, in consultation with the MDNR. This plan shall include a determination of the area of influence by the Alvemo Project, an erosion site inventory, an assessment of reasonable erosion control alternatives available for each site, and implementation dates for the erosion control option(s) selected for each site. The plan shall include a mechanism for the BRLP to identify and control future erosion problems caused by the Alvemo Project.

5.0. Alvemo Project - Natural Organic Debris Maintenance:

5.1. The BRLP shall, within one year of the issuance of the FERC license, develop and, with the approval of the MDEQ and the MDNR, implement a program to pass natural vegetative debris (logs, stumps, sticks, limbs, leaves, and aquatic vegetation) collected on the trash racks and log booms over the Alvemo Dam in a manner which will not create a navigation hazard. The BRLP shall remove and properly dispose of all other materials collected in the trash racks and spill gates.

6.0. Schedule Modification:

6.1. The MDEQ may extend or modify the specified implementation schedules within this Certification upon written request from the BRLP, in the event the BRLP, despite their good faith efforts, is unable to meet the

schedules specified within this Certification because of events beyond their control.

7.0. Temporary Modification of Operational Requirements:

7.1. Operational requirements of this Certification may be temporarily suspended for completion of necessary inspections, maintenance activities, dam safety activities, and other activities as may be required by the FERC provided that prior-notice is given to the MDNR. _

8.0. Alvemo Project - Natural Resources Damages and Penalties:

8.1. The state reserves the right to seek civil or criminal penalties and liabilities under applicable law for natural resource damages which may occur.

9.0. Alvemo Project - Permits and Approvals:

9.1. Nothing herein shall relieve the BRLP from the requirement to obtain any other necessary permits, licenses, or approvals from other federal or state departments or agencies.

10.0. Alvemo Project- Right of Entry:

10.1. The BRLP shall allow the MDEQ, or any agent appointed by the MDEQ, upon the presentation of credentials, to enter upon the BRLP premises at reasonable times, to have access to and copy any records required to be kept under the conditions of this Certification, and to inspect the facilities or to sample any discharge of water from the Alvemo Project

11.0. Alvemo Project- Changes:

11.1. The BRLP shall notify the MDEQ and the MDNR within ten days of any change that has or may occur in the structures or operation of the Alvemo Project, which may affect compliance with the MWQS.

12.0. Alverno Project-Revocation:

12.1. If the MDEQ determines that the Alvemo Project can no longer comply with Section 401 (a) of the federal Clean Water Act and the

MWQS, then this Certification may be revoked or modified after appropriate public notice and opportunity for hearing.

ENVIRONMENTAL ASSESSMENT
FOR HYDROPOWER LICENSING

ALVERNO HYDROELECTRIC PROJECT
FERC Project No. 11730-000

MICHIGAN

Federal Energy Regulatory Commission
Office of Energy Projects
Division of Environmental and Engineering Review
888 First Street, N.E.
Washington, D.C. 20426

August 2001

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SUMMARY

On April 21, 1999, Franklin Hydro Inc. (Franklin or Applicant) on behalf of the Black River Limited Partnership (BRLP) filed an application with the Federal Energy Regulatory Commission (Commission) for an original license for the existing and operating Alverno Hydroelectric Project (FERC Project No. 11730-000). The Alverno Project had not been previously licensed by the Commission. The Alverno Project is located on the Black River about 5.3 miles upstream of its confluence with the Cheboygan River, in Aloha, Benton, and Grant townships, Cheboygan County, Michigan (Figure 1) and does not occupy any United States federal lands. The proposed project would have an installed generating capacity of 1.1 megawatts (MW) and would generate about 4.0 gigawatt-hours (GWh) of energy annually.

This environmental assessment (EA) analyzes the effects of the proposed action, the proposed action with additional staff-recommended measures, and no action. Our analysis shows that the best alternative for the Alverno Project to reduce or avoid adverse effects on environmental resources is to issue an original license for the project with the following applicant proposed and staff-recommended measures: (1) operate the project in a manner consistent with the State of Michigan's water quality standards set forth in the Section 401 Water Quality Certificate (WQC); (2) develop and implement a water quality monitoring program; (3) consult with resource agencies before performing any activities which may cause a significant mobilization of sediments; (4) operate the project in a modified run-of-river mode to maintain the water surface elevation of Black Lake within court-ordered levels; (5) develop and implement a gaging and flow compliance monitoring plan, including monitoring Black Lake water surface elevation, Alverno impoundment water surface elevation, and project operations; (6) cooperate with the resource agencies and non-government organizations in the management of lake sturgeon in the Black River; (7) develop and implement provisions to immediately provide flow to downstream reaches in the event of a project shutdown; (8) develop and implement a reservoir drawdown management plan to prevent adverse effects on aquatic resources from planned reservoir drawdowns for project maintenance; (9) develop and implement a natural organic debris management plan focusing on passing debris downstream of the project, to enhance habitat resources in the Black River; (10) develop and implement a wildlife management plan focusing on nesting structures, habitat enhancement, and vegetation management; (11) develop and implement a shoreline erosion control plan, for the Alverno impoundment; (12) development and implement a recreation management plan focusing on enhancing existing facilities; and (13) reserve authority for the Secretary of the Interior to prescribe the construction, operation, and maintenance of fishways. We discuss these measures in Section V and summarize them in Section VI of this EA.

Overall, these measures, along with standard articles provided in any license issued for the project, would protect, mitigate adverse effects to, and enhance fisheries and aquatic resources. In addition, the electricity generated from the project would be beneficial because it would reduce the use of fossil-fueled electric generating plants, conserve non-renewable energy resources, and reduce atmospheric pollution.

Under the provisions of Section 10(j) of the Federal Power Act (FPA), each hydroelectric license issued by the Commission shall include conditions based on recommendations of federal and state fish and wildlife agencies, to adequately and equitably protect, mitigate damages to, and enhance fish and wildlife (including spawning grounds and habitat) affected by the project, unless such recommendations are inconsistent with the FPA or other applicable law. On March 27, 2000 and March 24, 2000, the U.S. Department of the Interior (Interior) and the Michigan Department of Natural Resources (MDNR) (respectively) filed recommendations for the protection, mitigation, and enhancement of such resources affected by the proposed project in response to the Notice of Application Ready for Environmental Assessment issued on January 27, 2000.

Commission staff and the MDNR and Interior held a Section 10(j) teleconference on January 23, 2001, to attempt to resolve agency recommendations that staff preliminarily determined to be inconsistent with the FPA Unresolved inconsistencies include three of Interior's recommendations to: (1) operate the project in a instantaneous run-of-river mode; (2) install flow gaging stations to track compliance with run-of-river operations; and (3) maintain a flow-based run-of-river compliance standard. Staff determined that an instantaneous run-of-river mode at the Alverno Project would cause a significant loss of fish and aquatic resources habitat in Black Lake. Operation of the Alverno Project in an instantaneous run-of-river mode is also inconsistent with the 401 WQC issued by the Michigan Department of Environmental Quality (MDEQ).

On April 16, 1999, BRLP applied to the MDEQ for a WQC for the Alverno Project, as required by Section 401 of the Clean Water Act. On March 21, 2000, the MDEQ issued a 401 WQC for the project, focusing on water quality, project operations, including bank erosion, but not other potentially controversial resource areas, such as fish passage.

Based on our independent review and evaluation of the proposed project, agency recommendations, and the no-action alternative, we recommend issuing an original license for the Alverno Project with our additional staff-recommended enhancement measures. We recommend this option because: (1) the project's continued operation would have minor environmental effects; (2) our recommended measures would protect

and enhance fishery and aquatic resources; and (3) about 4.0 gigawatthours (GWh) of energy that would be generated annually from a renewable resource would continue to reduce the use of fossil-fueled, steam-electric generating plants, conserve nonrenewable energy sources, and reduce atmospheric pollution.

On the basis of our independent environmental analysis, we conclude that issuing licenses for the Alverno Project as proposed by the applicant's, with additional staff-recommended measures, would not be a major federal action significantly affecting the quality of the human environment.

ENVIRONMENTAL ASSESSMENT

Federal Energy Regulatory Commission
Office of Energy Projects
Division of Environmental and Engineering Review
Washington, D.C.

Alverno Hydroelectric Project
FERC Project No. 11730-000

I. INTRODUCTION

On April 21, 1999, Franklin Hydro Inc. (BRLP or Applicant), on behalf of the Black River Limited Partnership (BRLP), filed an application for an original license for the Alverno Hydroelectric Project (FERC Project No. 11730-000). The existing and operating Alverno Project has not previously been licensed by the Commission. The Alverno Project is located on the Black River in Aloha, Grant, and Benton townships, Cheboygan County, Michigan (Figure 1). The proposed project would have a generating capacity of 1.1 megawatts (MW) and would annually generate about 4.0 gigawatt-hours (kWh) of energy. The project does not occupy any United States lands.

II. PURPOSE AND NEED FOR ACTION

A. Purpose of Action

The Commission must decide whether to issue an original license for the Alverno Project and what, if any, conditions should be placed in any license issued. In this environmental assessment (EA), we assess the environmental and economic effects of operating the project as proposed by the applicant, operating the project as proposed by the applicant with additional staff-recommended measures, and no-action.

In deciding whether to issue any license, the Commission must determine that the project adopted will be best adapted to a comprehensive plan for improving or developing a waterway. In addition to the power and development purposes for which licenses are issued, the Commission must give equal consideration to the purposes of energy conservation, the protection, mitigation of damage to, and enhancement of fish and wildlife (including related spawning grounds and habitat), the protection of recreational opportunities, and the preservation of other aspects of environmental quality.

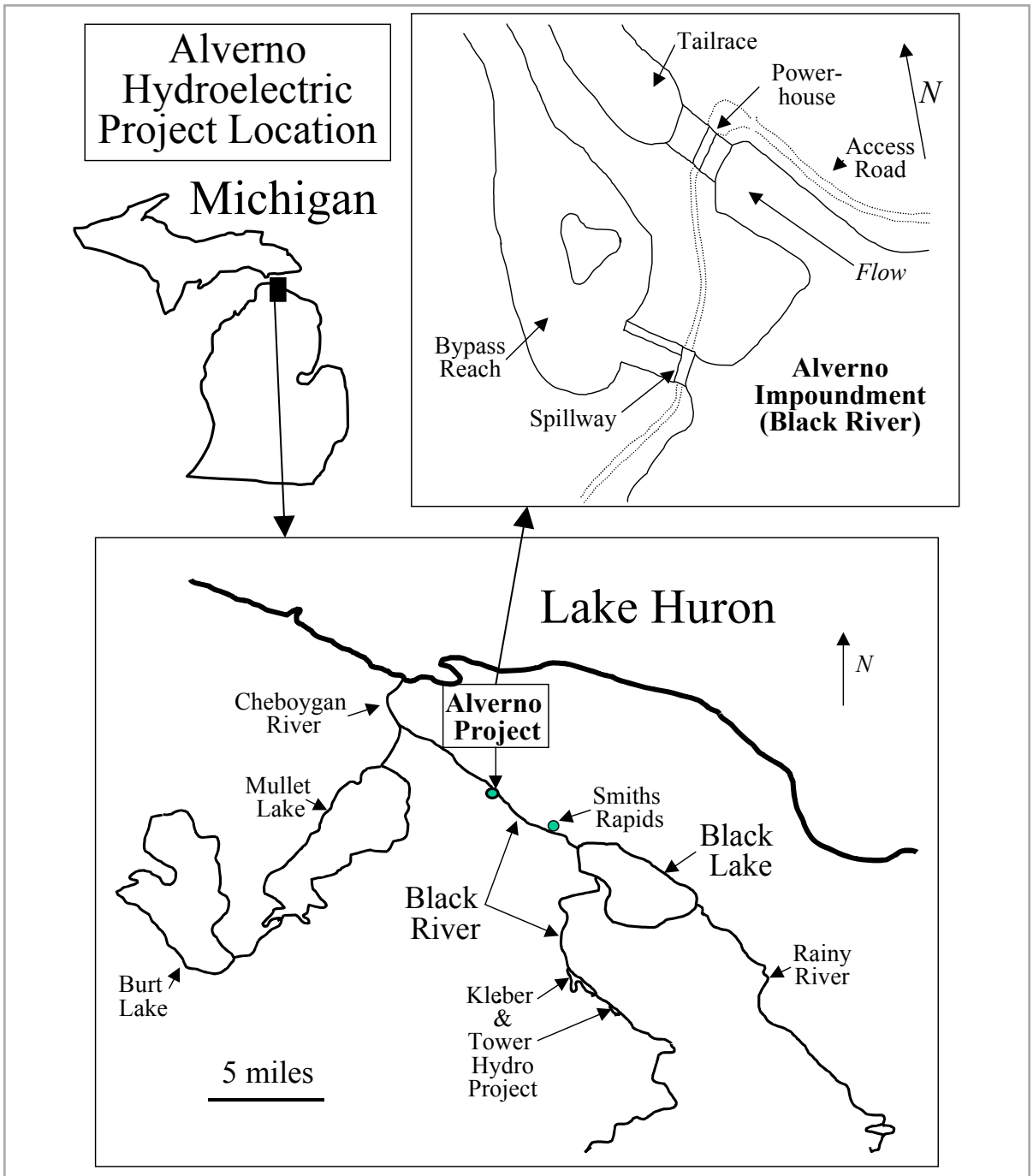

Figure 1. Location of the Alverno Hydroelectric Project FERC No. 11730-000 (Source: BRLP, 1999, as modified by staff).

B. Need for Power

If licensed with our recommendations, the Alverno Project will generate an average of 4,000 MWh of energy annually.

To assess the need for power, we reviewed the needs in the operating region in which the projects are located. The Alverno Project is located in the East Central Area Reliability Coordination Agreement Region (ECAR) of the North American Electric Reliability Council (NERC). NERC annually forecasts electrical supply and demand in the nation and the region for a ten-year period. NERC's most recent report[23] on annual supply and demand projections indicates that, for the period 1998 through 2007, the demand for electric energy in the East Central region will grow at an average rate of 1.59 percent annually (from 524,414 MWh to 624,683 MWh). The project could displace existing and planned nonrenewable fossil-fueled generation which contributes to the production of nitrous oxides and sulfurous oxides which contribute to air pollution, and carbon dioxide, which may contribute to global warming. In addition, the hydroelectric generation could contribute to diversification of the generation mix in the East Central region.

We conclude that the project's power could displace nonrenewable fossil-fired generation, contribute to a diversified generation mix, and help meet a need for power in the ECAR area.

III. PROPOSED ACTION AND ALTERNATIVES

A. Proposed Action

1. Project Facilities

The Alverno Project is located on the Black River in the northern region of the lower peninsula of Michigan (Figure 1). The constructed project consists of a powerhouse located on the eastern riverbank that is integral with a 360-foot-long earth-filled dam (Figure 1). The dam includes a concrete spillway towards the western river bank that is controlled by a 16-foot high radial gate. A three-foot wide abandoned log chute and fish ladder is located adjacent to the spillway. The impoundment formed by Alverno dam extends approximately 2.5 miles upstream and has a normal surface area of 80 acres and a gross storage capacity of 480 acre-feet.

[23]ECAR's Electricity Supply and Demand Database, Data set 1997-2006.

The 76-foot by 46-foot concrete powerhouse contains two horizontal, 6-foot diameter propeller turbines and accompanying 2,400-volt generators that generate 3.8 gigawatt-hours (GWh) of energy annually. The two turbine intakes have trashracks that are 17-feet deep by 21-feet long and constructed of 0.25-inch vertical steel bars, having a clear bar spacing of 1.25 inches.

2. Existing and Proposed Project Operations

The BRLP operates the Alverno Project in a non-peaking, modified run-of-river mode. At some flow levels, operation of the Alverno Project has a direct influence on water surface elevations of Black Lake, a 10,130-acre natural lake located 4.3 miles upstream of Alverno dam. Black Lake is not part of the Alverno Project. A 1965 court order dictated that Black Lake be maintained near an elevation of 612.2 feet from May 15 through October 31, and near an elevation of 610.5 feet from December 1 through April 15. Because the Alverno Project serves as the hydraulic control for Black Lake at some flow levels, depending on the season, the Alverno Project may be operated to pass more or less than inflow to maintain the water surface elevation of Black Lake at the court-ordered level. Within these seasonally-occurring operational constraints, the BRLP operates the Alverno Project in a run-of-river mode whenever possible. The BRLP proposes to continue to operate the Alverno Project in a non-peaking, modified run-of-river mode.

The applicant proposes to install a third generating unit that would provide finer-scale control over flows through the project. The third unit would have a hydraulic capacity of 20 to 75 cfs, which would enable the BRLP to provide flows downstream of the project on a more continual basis than what is currently possible with the existing turbines.

3. Proposed Environmental Measures

To protect, mitigate, and enhance project-related environmental resources, the BRLP proposes to:

(1) install a third turbine, having a low flow capacity (20 to 75 cfs), to maintain a minimum flow (unspecified) downstream of the Alverno Project at all times;

(2) operate the project in a modified run-of-river mode to maintain Black Lake elevations near 612.2 feet in summer (May 15 through October 31) and 610.5 feet in winter (December 1 through April 15);

(3) give $2,000 each year to the MDNR for unavoidable losses of fish from entrainment mortality at the project;

(4) complete a bank stabilization program, including transplanting native brush into existing erosion areas and establishing emergent aquatic vegetation along the impoundment's waterline;

(5) construct and operate a sluiceway to transport woody debris accumulating at the project; and

(6) provide new parking and fishing areas, and a restroom facility that are accessible for persons with disabilities, and additional downstream shoreline areas for fishing sites, and a canoe portage.

B. Proposed Action with Additional Staff-Recommended Measures

In addition to Alverno's proposed actions, the staff recommends several additional environmental enhancement measures, including:

(1) operate the Alverno Project in a manner consistent with the State of Michigan's water quality standards set forth in the 401 Water Quality Certificate;

(2) in consultation with the resource agencies, develop and implement a water quality monitoring program the fifth year after license issuance and every five years thereafter;

(3) consult with resource agencies before performing any activities, which may cause a significant mobilization of sediments;

(4) operate the project in a modified run-of-river mode to maintain the water surface elevation of Black Lake at court-ordered levels;

(5) develop and implement a gaging and flow compliance monitoring plan, in consultation with the resource agencies, including monitoring Black Lake water surface elevation, Alverno impoundment water surface elevation, and project operations;

(6) cooperate with the resource agencies and non-governmental organizations (NGOs) in the management of lake sturgeon in the Black River;

(7) develop and implement provisions to immediately provide flow to downstream reaches in the event of a project shutdown;

(8) develop and implement a reservoir drawdown management plan, in consultation with the resources agencies, to prevent adverse effects on aquatic resources from planned reservoir drawdowns for project maintenance;

(9) develop and implement a natural organic debris management plan, in consultation with the resource agencies, focusing on passing debris downstream of the project, to enhance habitat resources in the Black River; .

(10) develop and implement an erosion and sediment control plan;

(11) develop and implement an wildlife management plan;

(12) develop and implement an recreation management plan; and

(13) measures to protect any undiscovered cultural resources.

C. No-Action

We define no-action as maintaining the environmental status quo. The project would not be licensed and the project would continue to operate without any environmental measures. We use this alternative to establish the baseline environmental conditions for comparison with other alternatives.

D. Alternatives Considered but Eliminated from Further Consideration

Federal Takeover and Decommissioning

Federal takeover and decommissioning relate to projects already licensed by the Commission and so these are not viable potential alternatives, because the Alverno Project has never been licensed by the Commission.

IV. CONSULTATION AND COMPLIANCE

A. Consultation

The Commission's regulations require applicants to consult with appropriate state and federal environmental resource agencies and the public before filing a license application. This consultation is required to comply with the Fish and Wildlife Coordination Act, the Endangered Species Act (ESA), the National Historic Preservation Act (NHPA), and other federal statutes. Pre-filing consultation must be complete and documented in accordance with the Commission's regulations. After an application is accepted, the Commission issues a public notice and seeks formal comment in accordance with federal statutes. Comments become part of the record.

The following entities commented on the application in response to the January 28, 2000 issuance of the Notice that the Application is Ready for Environmental Analysis.

Source	Date of Letter
Michigan Department of Natural Resources (MDNR)	March 24, 2000
U.S. Department of the Interior (Interior)	March 27, 2000
Black Lake Association (BLA)	April 14, 2000

B. Interventions

On August 19, 1999, the Commission issued a notice that BRLP had filed an application to license the Alverno Project. This notice set October 19, 1999 as the deadline for filing protests and motions to intervene. In response to this public notice for the project, the following entities filed motions to intervene, but not in opposition to the proceeding:

Intervenor	Date of Motion
Michigan Department of Natural Resources and Michigan Department of Environmental Quality (MDEQ)	October 14, 1999
The Michigan Hydro Relicensing Coalition (MHRC)	October 13, 1999

The State of Michigan, represented by the MDNR and MDEQ in this proceeding, intervened for the project citing concerns regarding the project's impact on the natural reproducing lake sturgeon population in Black Lake, located upstream of the Alverno Project. The MHRC intervened for the project citing their general interest in fishing, boating, and other recreational activities and their goal of protecting and enhancing riverine ecosystems through the relicensing process. We address intervenor concerns in the environmental analysis section (Section V) of this EA.

C. Scoping

Before preparing this EA, we conducted scoping to determine what issues and alternatives should be addressed. A scoping document was distributed to interested agencies and others on August 17, 1999. The scoping document described the environmental resources that would and would not be analyzed in detail, and identified cumulatively affected resources, based on information contained in the license applications, agency and public comments, and the intervention process. Two public scoping meetings were held on September 21, 1999, in the town of Benton, Michigan.

The Notice of Scoping Meetings and Site Visit and Soliciting Scoping Comments set October 17, 1999, as the deadline for filing comments. By letter dated October 15, 1999, the MDNR provided comments on the Scoping Document.

Comments on the Scoping Document provided by the MDNR as well as responses and comments provided at the scoping meetings were considered and incorporated into the analysis of this EA.

D. Section 18 Fishway Prescriptions

Section 18 of the FPA states that the Commission shall require the construction, maintenance, and operation by a licensee of such fishways as may be prescribed by the Secretary of the Interior, or the Secretary of Commerce, as appropriate.[24]

[24] Section 18 of the FPA provides that "the Commission shall require construction, maintenance, and operation by a licensee at its own expense such fishways as may be prescribed by the Secretary of Commerce or the Secretary of the Interior, as appropriate."

Pursuant to Section 18 of the FPA, Interior filed with the Commission on March 28, 2000, a request for the reservation of authority to prescribe the construction, operation, and maintenance of upstream and downstream fishways.

The Commission recognizes that future fish passage needs and management objectives cannot always be determined at the time of project licensing. Under these circumstances, and upon receiving a specific request from Interior, we recommend the Commission follow its practice of reserving the Commission's authority to require such fishways as may be prescribed by the Secretary of the Interior, or to require modification to the fishways prescribed by Interior, as needed.[25]

E. Water Quality Certificate (WQC)

Under Section 401 (a)(1) of the Clean Water Act (CWA), the Commission may not issue a license for a hydroelectric project unless either the licensee obtains water quality certification from the certifying agency of the state in which the project discharge will originate, or the certifying agency waives certification. Section 401(a)(1) states that certification is deemed waived if the certifying agency fails to act on a water quality certification request within a reasonable period of time, not to exceed one year.[26] Section 401(d) of the CWA provides that state certification shall set forth conditions necessary to ensure that licensees comply with specific portions of the CWA and with appropriate requirements of state law.[27]

On April 16, 1999, the applicant requested a water quality certification for the Alverno Project from the MDEQ, as required by Section 401 of the CWA. On March 21, 2000, the MDEQ issued the WQC for the project, subject to 23 conditions pertaining to project operations, measures to maintain water quality, erosion control, debris removal, and monitoring. We discuss and analyze the WQC conditions related to water, fisheries,

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[25] The Commission has specifically sanctioned the reservation of fishway prescription authority at relicensing. See Wisconsin Public Service Corporation, 62 ¶ 61,095 (1993); affirmed, Wisconsin Public Service Corporation v. FERC, 32 F.3d 1165 (1994).

[26] Section 401(a)(1) requires an applicant for a federal license or permit to conduct any activity that may result in any discharge into navigable waters to obtain from the state in which the discharge originates certification that any such discharge will comply with applicable water quality standards.

[27] 33 U.S.C. Section 1341(d).

and wildlife resources in the Environmental Analysis section of this draft EA (Section V.C.2).

F. Coastal Zone Consistency Determination

The MDNR's Land and Water Management Division is responsible for reviewing hydroelectric projects for consistency with the state's Coastal Management Program (CMP). On December 20, 1999, the BRLP filed with the Commission a letter from Christy L. Fox of the MDNR's Land and Water Management Division, stating that the Alverno Project is consistent with Michigan's Coastal Management Program.

V. ENVIRONMENTAL ANALYSIS

In this section, we describe the Black River Basin, including the project drainage area and other man-made and natural features that could affect the resources analyzed. We also discuss the environmental resources subject to cumulative effects from the project when considered in combination with other actions affecting the resources. Then, for each resource, we describe the affected environment, the environmental effects and recommendations, cumulative effects (where applicable), and the unavoidable adverse effects of the proposed action with additional staff-recommended measures.

We address in detail only those resources affected by the operation of the Alverno Project, and include analysis of comments by interested parties on the project's proposed operation. Unless otherwise mentioned, the sources of our information include the license application (BRLP, 1999) and supplemental filings made by the applicant, resource agencies, and NGOs providing comments on the proceeding.

A. General Description of the Black River Basin

The Alverno Project is located on the Black River, which is a tributary of the Cheboygan River located in the northern region of the lower peninsula of Michigan (Figure 1). The Black River originates in the western end of Presque Isle County, Michigan, located east of Cheboygan County. From the headwaters in Presque Isle County, the Black River flows through the Tower and Kleber Hydroelectric Project (FERC No. 10615), which has two developments, and into the 10,130-acre Black Lake (Figure 1). From Black Lake, the Black River flows 4.3 miles to the Alverno Project and then 5.3 miles to the Cheboygan River, which discharges into western Lake Huron. The Black River basin drains an area of approximately 620 square miles upstream of Alverno dam, of which, about 597 square miles are comprised of Black Lake and its tributaries.

The Cheboygan River watershed contains an "inland waterway system" that consists of several large inland lakes, including Burt and Mullet lakes, that are inter-connected by riverine reaches (Figure 1). A lock system, located in the city of Cheboygan at the mouth of the Cheboygan River, provides boat access to and from the inland waterway to Lake Huron. The lock system also enables the passage of fish and other aquatic organisms to and from Lake Huron and inland areas connected by the inland waterway. At present, Alverno dam functionally isolates Black Lake and the upper Black River from the inland waterway and, hence, a direct ecological connection to Lake Huron and Burt and Mullet lakes.

The Black River watershed is mostly forested and open space, much of which is State land. Agriculture comprises a relatively small percentage of the entire watershed. Minimal urban development exists in the watershed and this development is contained in several small communities and strips of residential development along roads and the shoreline of the Alverno impoundment and Black Lake.

B. Scope of the Cumulative Effects Analysis

According to the Council on Environmental Quality's regulations for implementing the National Environmental Policy Act (NEPA) (C.F.R. § 1508.7), cumulative effects are the effects on the environment, which result from the incremental effect of the action when added to other past, present, and reasonably foreseeable future actions. Cumulative effects can result from individually minor, but collectively significant, actions taking place over a period of time, including hydropower and other land and water development activities.

Based on the license applications, comments from agencies and other interested parties, and our preliminary analysis, we reviewed all resources to determine if they could be affected in a cumulative manner by the licensing of the Alverno Project. We used this review to determine the geographic and temporal scope of our cumulative effects analysis.

We identified possible cumulative effects on water quality and fisheries resources. Cumulative effects on fisheries resources include the potamodromous lake sturgeon inhabiting the Cheboygan River watershed, including Black Lake and the upper Black River. Lake sturgeon originating in Lake Huron may also use the Cheboygan River and its tributaries for spawning and juvenile rearing. Operation of the Alverno Project, along with the Tower and Kleber Hydroelectric Project, and the presence of other non-hydro dams could cumulatively affect habitat availability and upstream and downstream movements of juvenile and adult lake sturgeon.

1. Geographic Scope

We define the geographical boundary of our cumulative effects analysis as portions of the Cheboygan River watershed that include Burt and Mullet lakes, and associated riverine reaches of the inland waterway system, the Black River, from its confluence with the Cheboygan River to Black Lake, and the upper Black River, upstream to the Kleber development (Figure 1). This geographic scope includes the physical limits or boundaries of the proposed action's effects on potamodromous lake sturgeon inhabiting the Cheboygan River watershed as well as lake sturgeon originating in Lake Huron that may use the watershed for spawning and rearing of juveniles.

2. Temporal Scope

The temporal scope of our analysis includes a discussion of past, present and future actions and their effects on cumulatively affected resource areas. Based on the term of the proposed license, we looked 30 to 50 years into the future, concentrating on the effect on the resource from reasonable foreseeable future actions. The effects of past actions on cumulatively affected resources is by necessity limited to the available information for each resource. We identified the present resource conditions based on the license application, comprehensive plans, and scoping comments received from agencies.

C. Environmental Analysis of the Proposed Action and Alternatives

Only those resources that are involved in substantial project-related issues are analyzed in detail in this section. We have eliminated socioeconomics from our detailed analysis. We note, however, that construction activities associated with the installation of a third generating unit at the Alverno Project would have minor effects on business, infrastructure, and tax revenues.

1. Geology and Soils

a. Affected environment

Surface geology in the project area consists primarily of glacial moraine deposits that have been cut through by the river. The river shoreline includes both natural banks and river terraces that have been disturbed by residential developments.

Copeland (1995) conducted a Phase I environmental assessment of sediment PCBs near the Alverno Project. Soil and sediment samples from six locations were analyzed for seven PCB aroclors and in all instances, PCB concentrations were below limits of

detection. No spills or leaks of chemicals have been reported within the project area. No hazardous waste sites are located near the project.

The BRLP completed a survey of erosion along the Alverno impoundment on August 18, 1998. The majority of the impoundment shoreline has low slope (less than 15%) that is densely covered with bulrushes and cattails. Shoreline areas having higher slope have stable vegetative cover of grass, bulrushes, cattails, and brush. Unvegetated shoreline along the Alverno impoundment consists of exposed stones, cobbles, and larger rocks along both developed and undeveloped frontage. Past evidence of erosion was found to be stabilized by dense growths of bulrushes and cattails. Minor existing erosion was found near the Alverno dam on the east bank of the river where the slope is greater than 50 percent.

b. Environmental impacts and recommendations

The applicant proposes to complete vegetative plantings to control soil erosion observed during the August 18, 1998 survey. The MDNR, in it's March 24, 2000, 10(j) letter recommends that the BRLP, in consultation with the resource agencies, develop and implement a plan to inventory, control, and repair present and future shoreline erosion sites on the three reservoirs and downstream of the Project in the project influence zone. The MDNR recognizes that reduction of the amount of flow fluctuation in the riverine sections and the stabilization of reservoir levels, as recommended by the applicant, will assist in alleviating erosion on this project. In it's March 27, 2000, 10(j) letter, Interior recommends that the BRLP develop a plan to periodically evaluate the condition of eroding shoreline within the project boundary and stabilize heaving shoreline areas on licensee-owned project land. Interior also encourages the BRLP to work with owners of other shoreline property to address erosion on their land.

Our Analysis

Only minor soil erosion occurs in the Alverno impoundment. We agree with the applicant's approach of using vegetative planting to control soil erosion and the MDNR concurs that this is a reasonable way of minimizing effects of erosion. The re-stabilization of eroded riparian habitats using vegetative planting, in addition to reducing sediment loads to the Black River, could have indirect benefits by providing habitat for wildlife resources.

The applicant's proposes to continue the existing modified run-of-river operating mode, which causes minor fluctuations in impoundment levels within existing ranges. Thus, shoreline erosion should continue to be minimal. We conclude that the project will

have minor, insignificant impacts on the geological and soil resources. Further, we recommend that any license issued for the project require that a erosion control and sediment control plan be develop, in consultation with the resource agencies, that would detail procedures for monitoring erosion, the stabilization method, and provide a schedule for implementing the measures.

c. Unavoidable adverse impacts

Minor, short-term soil erosion impacts would occur during the construction and installation of a third generating unit and construction of recommended recreation enhancements, discussed in Section V.B.5.

2. Water Resources

a. Affected environment

Water Use and Quantity

Discharge

Flow data (1942 to 1970) for the Black River in the vicinity of the Alverno Project are available from US Geological Survey (USGS) gage No. 4132000, located at the outlet of Black Lake. We adjusted flows recorded at the gage to account for the difference in basin area between the outlet of Black Lake (597 square miles) and the Alverno Project (620 square miles). Percent exceedance flows at the Alverno Project are as follows: 90 percent = 132 cfs; 50 percent = 394 cfs; and 10 percent = 895 cfs. Flow patterns in the Black River are typical of those in northern temperate regions, where peaks occur in April and May with low flows occurring between July and September. Lowest flows in the Black River consistently occur in August.

Tailrace Flows and Wetted Area

Flows in the Black River downstream of Alverno are influenced by the Cheboygan dam located 5 miles downstream on the Cheboygan River. The Black River immediately downstream of the Alverno Project is the upstream extent of the backwater of Cheboygan dam. As a result, the Alverno tailrace remains wetted even when only minor (3-5 cfs) leakage flows occur at the project.

The applicant completed studies in the summer of 1998 to quantify the water surface profile and river cross-section in the reach downstream of Alverno dam. Water surface profiles were recorded at five locations from Alverno dam to the confluence of the Black and Cheboygan rivers under three flow conditions: (1) no flow through the turbines; (2) gates open 70 percent on one turbine; and (3) gates open 100 percent on one turbine.

The BRLP found the water surface elevation in the tailrace increases slightly with turbine discharge. The tailrace elevation increased 0.54 feet from no flow to 100 percent gate open on one turbine. At a distance of 2.21 river miles downstream of Alverno, the water surface elevation increased 0.34 feet with one turbine running at 100 percent gate opening and 0.24 feet with the same turbine running at 70 percent gate opening.[28] Minor changes in the wetted perimeter of the river of less than or equal to one percent were also observed under the different flow conditions.

Black Lake Elevation Control

As noted in Section III.A.2, at some flow levels, operation of the Alverno Project has a direct influence on water surface elevations of Black Lake. At summer lake levels, operation of the project directly influences the level of Black Lake when the lake's outflow is between 0 and about 800 cfs. As outflow increases to greater than 800 cfs, the restriction at Smiths Rapids, not the operation of the Alverno Project, serves as the hydraulic control for Black Lake. Smiths Rapids continues to exert greater hydraulic control over Black Lake levels as outflows from the lake increase to greater than 800 cfs. In winter, the cross-sectional area at Smiths Rapids is smaller than in summer, because of lowered water levels in Black Lake and in the river system in general. The formation of ice along the banks and on rocks on the river bottom in winter further restricts the available channel cross-sectional area at Smiths Rapids. The BRLP estimates that in winter, Smiths Rapids becomes the primary hydraulic control for Black Lake at outflows of approximately 400 cfs.

Other Discharges

There are no known public water supplies or public wastewater discharges on any tributary in the Black River basin. The Wolverine Power Supply Cooperative holds a NPDES discharge permit to discharge 248,000 gallons-per-day of non-contact cooling

[28]The flow through the turbine at 70 percent opening is estimated at 245 cfs and 375 cfs for the 100 percent opening.

water to the river near Tower, Michigan, upstream of Alverno. There are no known industrial, commercial, domestic, or irrigational users of the Black River between Black Lake and the Cheboygan River.

Water Quality

The Black River from Black Lake to the Cheboygan River is designated as a warmwater fishery by the MDNR. The MDEQ has designated the Black River in the vicinity of the project as Class B waters, suitable for body-contact and recreation, with a minimum acceptable dissolved oxygen (DO) concentration of 5 mg/l. Water quality testing completed in 1990 by the MDNR Surface Water Quality Division, two miles downstream of Black Lake, found water temperature ranged from 39.2 to 73.4 ^{o}F, DO from 7.8 to 12.7 mg/l, total dissolved solids from 188 to 207 mg/l, and pH in the 8.1 to 8.4 range.

The applicant monitored water temperature and DO at the Alverno Project in 1996 and 1997. From June 19, 1996, through October 18, 1996, water temperature and DO were continuously monitored at Smiths Rapids (about 2.5 miles upstream of Alverno) and in the Alverno Project's tailrace. Water temperatures did not exceed state standards and exhibited no significant differences between the upstream and downstream sampling locations. The average water temperature upstream of the project was 69.6 ^{o}F and 66.4 ^{o}F downstream of the project (table 1).

Dissolved oxygen concentrations exceeded the minimum water quality standard 5.0 mg/l at all times (table 1). The average DO concentration downstream of Alverno was 9.0 mg/l and the lowest concentration, recorded in August/September, was 6.8 mg/l. Upstream of the project, the average DO concentration was 8.9 mg/l. Dissolved oxygen minima of 3.0 and 4.5 mg/l were recorded at Smiths Rapids, but after further review of the data, the MDNR concluded the values were erroneous and not representative of water quality in the Black River.

Table 1. Seasonal average, minimum, and maximum (A) water temperature (°F) and (B) dissolved oxygen measured upstream and downstream of Alverno dam (source: BRLP, 1999). The upstream location was just upstream of Smith Rapids (2.5 miles upstream of the project) and the downstream location was in the tailrace.

(A) Water temperature

	Upstream			Downstream		
	Mean	Minimum	Maximum	Mean	Minimum	Maximum
June/July	70.5	62.6	79.9	64.9	64.2	65.8
July/August	72.7	65.8	80.1	72.9	66.7	80.2
August/ September	71.4	61.3	77.4	71.1	61.7	76.6
September/ October	64.0	48.0	77.4	56.7	48.9	65.7

(B) Dissolved oxygen

	Upstream			Downstream		
	Mean	Minimum	Maximum	Mean	Minimum	Maximum
June/July	9.3	3.0	11.0	9.3	8.9	10.2
July/August	8.2	4.5	10.0	8.6	7.0	9.6
August/ September	8.6	6.3	10.3	8.2	6.8	10.1
September/ October	9.4	6.3	11.8	10.0	8.7	11.8

b. Environmental effects and recommendations

Water Quantity

Although the project's operating mode relates to water quality, the effects pertain mostly to fisheries and other aquatic biota. Therefore, we discuss these effects in section V.C.3, Fisheries Resources.

Water Quality

The applicant proposes no additional water quality monitoring at the Alverno Project.

The WQC issued for the Alverno Project states that the project would comply with Section 401(a) of the CWA and the applicable State of Michigan water quality standards if it operates according to the terms and conditions set forth in the WQC, as follows:

- The BRLP shall not warm the Black River downstream from the Alverno Project, by operation of the project, to temperatures in degrees Fahrenheit higher than the following monthly average temperatures: January = 38 °F; February = 38 °F; March = 41 °F; April = 56 °F; May = 70 °F; June = 80 °F; July = 83 °F; August = 81 °F; September = 74 °F; October = 64 °F; November = 49 °F; and December = 39 °F.[29]

- The BRLP shall not cause the DO concentration measured in the Black River downstream of the Alverno Project to be less than 5.0 mg/l at any time.[30]

- In the event that any of the water quality limitations listed above cannot be met, or if conditions change to indicate that they may not be met, the BRLP should notify the Cadillac District Supervisor of the MDEQ, SWQD, and take all practical steps to achieve compliance and minimize impacts on downstream waters.

- The BRLP shall monitor the temperature and DO of the Black River from June 1 to September 30 at representative locations upstream of the impoundment and

[29]This section shall not apply when the natural temperatures of the Black River measured upstream of the Alverno impoundment exceed the above monthly average temperature values.

[30]This section shall not apply when the DO of the Black River measured upstream of the Alverno impoundment is less than 5.0 mg/l.

immediately downstream of the Alverno Project, beginning five years after the issuance of a license and every five years thereafter.

- During the years when DO and temperature are monitored, the BRLP shall also measure the temperature and DO profile in the deepest part of the impoundment, at 0.5-meter increments, and record Secchi disc depth readings every two weeks from June through September.

- Ten years after the issuance of license, and every ten years thereafter, the BRLP shall analyze the sediments in the Alverno impoundment for the following parameters: (1) oil and grease; (2) total cadmium; (3) total copper; (4) total mercury; (5) total organic carbon; (6) total selenium; (7) total zinc; (8) total polychlorinated biphenyls (PCBs); (9) total arsenic; (10) total chromium; (11) total lead; (12) total nickel; (13) total phosphorous; (14) total silver; and (15) acid volatile sulfides.

The MDNR's recommendations regarding water quality at the Alverno Project are encompassed by conditions of the WQC. Additionally, the MDNR recommends the licensee not warm the Black River downstream of the Alverno dam more than 5 ^{o}F greater than the temperature as measured upstream of the Alverno impoundment. The MDNR also specifies the licensee should monitor compliance with DO and water temperature standards (see WQC) in the discharge channel immediately downstream of Alverno dam. The MDNR indicates that all violations of water quality standards may require the payment of liquidated damages for each event.

Interior recommends the licensee: (1) develop and implement a water quality monitoring plan within 24 months of license issuance, in consultation with the MDEQ; (2) maintain State of Michigan water quality standards in the project's discharge; and (3) conduct periodic water quality monitoring over the term of the license in accordance with a schedule approved by the MDEQ.

Our Analysis

The applicant's study confirmed that water quality in the Black River in the vicinity of the Alverno Project meets state standards. Good water quality in the Black River reflects the undeveloped nature of the watershed and lack of significant point source inputs (industrial or municipal) of pollution. No industrial processes that may influence water quality, such as waste water treatment facilities, are dependent upon flows from the Alverno Project. The Alverno impoundment is riverine in nature, shallow, and has a short hydraulic retention time and, thus, minimal potential to have adverse effects on water

quality. The modified run-of-river operation recommended by the resource agencies, along with provisions for minimum flow, will ensure that the project continues to support good water quality in the Black River.[31] Operation of the Alverno Project, as recommended, will maintain water quality standards outlined in the WQC. Licensing and continued operation of the Alverno Project would not have significant adverse effects on water quality and thus aquatic resources in the Black River.

We agree with the WQC condition and resource agency recommendation to periodically monitor water temperature and DO during the term of the license. The June 1 to September 30 period for continuous water temperature and DO monitoring upstream and downstream, as required by the WQC, is a suitable seasonal monitoring interval for the Alverno Project. We agree with Interior's recommendation for the licensee to develop a water quality monitoring plan and consult with the resource agencies regarding the frequency of sampling. It is likely that unless significant changes occur to existing land-use and development patterns in the Black River watershed, that monitoring water temperature and DO the fifth year after licensing and every five years thereafter, will be sufficient for detecting any potential project-related changes in water quality in the Black River.

The MDNR's recommendation that the licensee not warm the Black River more than 5 ^{o}F by operating the Alverno Project has little relevance to potential effects on aquatic resources. Water temperatures recorded by the BRLP both upstream and downstream of the Alverno Project are well within those considered optimal for survival and growth for fishes common to the lower peninsula of Michigan (Wehrly, *et al.* 1998). It is evident that the Alverno Project has a minimal and essentially an undiscernable effect on water temperatures in the Black River (table 1). With our recommendations for project operations (section V.C.2), the Alverno Project will continue to have minor effects on water temperature warming in the Black River.

The BRLP proposes to install a third generating unit, which would require some minor construction and ground disturbing activity. The BRLP's analysis of sediments revealed no detectable concentrations of potentially harmful toxicants. Further, although the operation of the Alverno Project and impounding of the Black River may indirectly affect the transport of chemical constituents, we find the operation of the project is not directly related to the presence of chemical compounds in project sediments. Therefore, at this time, we do not agree with the WQC condition for the licensee to monitor the 12

[31]The 401 WQC includes a condition for a 75 cfs minimum flow between flows of 75 and 245 cfs.

chemical constituents of impoundment sediments ten years after the issuance of the license and every ten years thereafter. We agree that the BRLP should consult with the resource agencies, and potentially conduct additional sampling for sediment chemical constituents, before performing any activities which may cause a significant mobilization of sediments. Consultation among the BRLP and resource agencies on approaches to minimize indirect environmental effects associated with construction would be beneficial to Black River aquatic resources.

We do not consider it appropriate for the BRLP to pay liquidated damages to the state for water quality violations. Assessing damages for water quality violations is beyond the purview of the Commission and, therefore, we do not recommend it as a term or condition of any license issued for the Alverno Project.

c. Cumulative effects

Cumulative effects on water quality could occur in the Black River through the operation of the Alverno Project along with other hydro and non-hydro projects and development activities in the Black River basin. The upper Black River basin is primarily undeveloped and has no known industrial developments that negatively affect water quality. The upstream Tower and Kleber Project is operated in a run-of-river mode, which minimizes any adverse effects on water quality of flows in the upper Black River that discharge into Black Lake. Subsequent outflows from Black Lake into the Alverno impoundment exceed state water quality standards. Water quality monitoring showed that the Alverno Project does not cause significant water temperature warming or decreases in DO and that waters discharged from the project meet state water quality standards. The project's reservoir is shallow, riverine in nature, and has a short hydraulic residence time, all of which serve to minimize the project's potential to affect water quality of inflowing waters. The modified run-of-river operation, necessary to maintain court-ordered Black Lake levels, would provide sufficient flow downstream of the project to prevent the diminishment of water quality. We conclude that with our recommended measures, the Alverno Project would not contribute to cumulative negative effects on water quality, and in turn fish and aquatic resources in the Black River.

d. Unavoidable adverse effects

None.

3. Fisheries Resources

a. Affected environment

The Alverno impoundment is integral with Black Lake as the outlet of the lake connects directly to the Black River. Biota may freely move between Black Lake and the Alverno impoundment. We presume that the fisheries community in the Black River in the vicinity of the project resembles that occurring in Black Lake. The MDNR has periodically sampled Black Lake by gill net and trap net over the last 30 years. Generally, the fisheries community is typical for a north-temperate lentic ecosystem and includes northern pike, perch, walleye, smallmouth and largemouth bass, sucker species, and various sunfishes. Walleye were last stocked in Black Lake in 1993 (MDNR stocking records). Suckers, walleye, and smallmouth bass have been observed spawning in the Smiths Rapids section of the Alverno impoundment.

The Michigan Natural Features Inventory (MNFI) identified pugnose shiner, a state-endangered species as being indigenous to glacial lakes, such as Black Lake, that have clear weedy shoals. However, no specimens have been directly observed in Black Lake.

Between 1993 and 1998, the MDNR stocked approximately 10,000 to 15,000 steelhead smolts in the Cheboygan River, downstream of the Alverno project (MNDR Fisheries Division Stocking Reports). Although upstream passage of adult steelhead to Alverno dam is possible, no substantive fishery is known to exist for adult steelhead in the vicinity of Alverno dam.

The inter-connection of the other large inland lakes in the Cheboygan River watershed with Lake Huron has made them susceptible to invasion from exotic biota, including zebra mussels. In contrast, habitats upstream of the Alverno dam, including Black Lake, have, to date, remained largely free of invasion by exotic species. Because Alverno dam impedes the upstream invasion of noxious species, fisheries communities in Black Lake and the upper Black River have maintained their status as above average fisheries.

Lake Sturgeon

Black Lake supports a naturally-reproducing population of potamodromous lake sturgeon. The MDNR has managed the Black Lake sturgeon population since the 1920's, including constructing spawning reefs (1973) in the upper Black River and initiating an egg-taking program (1982). Lake sturgeon spawn in reaches of the Black River upstream of Black Lake, downstream of the Tower and Kleber hydroelectric projects. The Commission issued a license in 1994 requiring the Tower and Kleber Project licensee to cooperate with the MDNR in managing lake sturgeon in the Black River, focusing on

operational considerations (67 FERC ¶ 62,126 (1994)). The Tower and Kleber Project is operated in a run-of-river mode to enhance lake sturgeon spawning (see Auer, 1996).

Both the habitat use characteristics as well as the population trends of lake sturgeon in Black Lake have been studied by the MDNR. Radiotagging studies have found that adult lake sturgeon use a diversity of habitats in Black Lake, with most found at depths of 23 feet in winter and 34 feet in summer (Hay-Chmielewski, 1987). Recent gill-net studies characterizing the lake sturgeon population found individuals ranging in age from age-9 through age-64. The age distribution of lake sturgeon was highly skewed toward younger individuals, as 50 percent of the sampled population was age-14 or less (Baker and Borgeson, 1999). The population size of greater than 90 cm lake sturgeon in Black Lake, those of harvestable size, declined from 1,599 fish in 1975 to 1,241 fish in 1997, with legal harvest accounting for 40 percent of the population decline (Baker and Borgeson, 1999). Given the low population size of lake sturgeon and the current rates of harvest, it is estimated that harvestable size lake sturgeon could be extirpated from Black Lake by 2011 (Baker and Borgeson, 1999).

Diminished populations of lake sturgeon throughout Michigan led to their listing as a state threatened species in 1994 (Section 36505(1a), Part 324, Endangered Species Protection, of Act No. 451 of the Public Acts of 1994). The MDNR has outlined a detailed strategy for rehabilitating and restoring lake sturgeon populations in Michigan (Hay-Chmielewski and Whelan, 1997). The MDNR considered Black Lake, as well as Burt and Mullet lakes, to have a high suitability for lake sturgeon rehabilitation or enhancement amongst other candidate Michigan lakes (Hay-Chmielewski and Whelan, 1997).[32]

Because the lower Black River is directly connected to the inland waterway system, lake sturgeon originating in either Lake Huron or Burt and Mullet lakes may migrate to the base of Alverno dam seeking upstream passage during the spring spawning period. The MDNR estimates the upper Black River upstream of Black Lake may be the only suitable spawning reach in the entire Cheboygan River watershed. Therefore, adult sturgeon congregating downstream of Alverno dam in spring likely fail to successfully spawn.

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[32] In the lake sturgeon plan, the MDNR recommended that lakes considered to be highly suitable for lake sturgeon rehabilitation and enhancement, such as Black Lake, should receive the highest priority for population restoration or rehabilitation activities (Hay-Chmielewski and Whelan, 1997).

b. Environmental effects and recommendations

Project Operations

The BRLP proposes to continue operating the Alverno Project in a modified run-of-river mode and to install a third turbine to enhance the control over Black Lake levels and improve downstream flow conditions.

The WQC issued for the Alverno project includes the following conditions regarding project operations:

- The BRLP shall, within six months of license issuance, install a calibrated staff gage in the Alverno impoundment at a location clearly visible to the public that shows the impoundment level referenced to the National Geodetic Vertical Datum. The impoundment level and the level of Black Lake shall be recorded hourly. An annual report of all recorded impoundment and Black Lake levels shall be submitted to the MDNR.

- The BRLP shall operate the Alverno Project in a run-of-river mode except as necessary to maintain Black Lake at court-ordered levels and except as provided under some flow conditions (see following condition). Run-of-river is defined as the instantaneous flow through the dam shall approximately equal instantaneous impoundment inflow as monitored by impoundment level elevations and stream flow downstream of the Alverno Project.

- When there are more than 75 cfs but less than 245 cfs available to operate the turbines, the Alverno Project may be operated in a limited store and release mode. During the limited store and release mode of operation, the BRLP shall: (1) maintain Black Lake at the court-ordered level; (2) minimize the frequency and magnitude of turbine flow release changes; and (3) provide a minimum flow release from the turbines of at least 75 cfs.

- The BRLP shall, within one year of license issuance, provide a plan for approval by the MDEQ, in consultation with the MDNR, to monitor flow of the Black River downstream of Alverno dam. This plan shall contain a timetable for implementation of monitoring within one full construction season after plan approval, annual submission of summary results to the MDNR, and a provision for submission of all data upon request.

- The BRLP will be given a three-year test period beginning after the flow monitoring plan is implemented, to determine BRLP's ability to comply with the requirements regarding operating mode and flows.

The MDNR's recommendations regarding project operations for the Alverno Project are essentially the same as those outlined above in the WQC by the MDEQ, including the key components to maintain the court-ordered lake levels of Black Lake at all times, operate the project run-of-river when possible, and provide a continuous minimum flow of 75 cfs, when flows are between 75 and 245 cfs. The MDNR also recommends the licensee develop and implement a gaging and compliance plan within 12 months of license issuance, in consultation with the FWS, the USGS, MDNR, and MDEQ. The MDNR recommends the plan include a means to continuously record flow and have these data made available via telephone or posted on the Internet on a daily basis; however, the MDNR did not specify which flows (project or river flows) should be continuously recorded.

The MDNR also recommends the licensee: (1) maintain a record of headwater elevations of the impoundment and Black Lake, recorded hourly, and that these recordings be provided to the MNDR in an annual report to include all recorded storage basin levels and all gate-opening changes in electronic form; (2) install a calibrated staff gage on the upstream wall of the dam, in a location clearly visible to the public (as required by the WQC); and (3) post interpretive signs near the gages and respective reservoir boat launch sites that describe the operation of the reservoirs.

The MDNR recommends a three-year test period be used to determine the ability of the licensee to maintain the above compliance standards for flow and Black Lake elevations, with the test protocol to be determined in consultation with the resource agencies. At the end of the three-year period, the MDNR recommends the licensee prepare a report to the Commission (within 90 days of the end of the test period), in consultation with the resource agencies, documenting their ability to maintain and comply with the above recommended operational requirements.

Interior recommends the licensee: (1) operate the Alverno Project in an instantaneous run-of-river mode, with no hydro peaking, to ensure the protection of fish and wildlife resources and water quality; (2) act to minimize the fluctuation of the reservoir's surface elevation, at all times, by maintaining a discharge from the project so that flows at any point in time, as measured immediately downstream from the reservoir,

approximate the sum of inflows to the reservoir; and (3) maintain a variance of not more than 0.25 feet from the legally established pool elevation.[33]

Interior also recommends the licensee, within 12 months of license issuance, develop a plan to monitor compliance with run-of-river operation, including: (1) construct, maintain, and fund a USGS flow gaging station, or comparable equipment, upstream and downstream of the dam to measure inflow and discharge, equipped with telemetry and funded by the licensee for the term of the license; (2) have no more than plus or minus 10 percent difference in discharge upstream and downstream of the project corrected for travel and accretion; (3) install a staff gage on the upstream wall of the dam or other appropriate location that is clearly visible to the public; (4) maintain a daily record of operation and provide pertinent information, including turbine operations, headwater and tailwater elevations, and hourly flow releases through the powerhouse and spillway, to the resource agencies upon request; and (5) maintain an automatic water-level sensor to continuously record headwater and tailwater elevations.

Our Analysis

Project Operations

We concur with the applicant's proposal, and the MDEQ's and the MDNR's endorsement of the proposal, to operate the Alverno Project in a modified store and release mode to maintain court-ordered Black Lake elevations. A modified store and release mode at the Alverno Project will continue to support the existing extensive productive shallow-water zones in Black Lake that are important fish and macroinvertabrate production areas.

Interior's recommendation for an instantaneous run-of-river operation for the project is at odds with both the WQC and the MDNR's recommendation. It is not possible to operate the Alverno Project in an instantaneous run-of-river mode and achieve the court-ordered water levels in Black Lake. Operating the Alverno Project with emphasis on maintaining state-ordered water elevations is critical for maintaining the extensive, productive shallow-water habitat found in Black Lake. Biologists from the MDNR have estimated that the water's edge in Black Lake would receded from one-half

[33]Interior did not specify in this recommendation which pool elevation should be maintained with a variance of no more than 0.25 feet. Because Interior defined the pool elevations as ones that are legally defined, we presume the recommendation applies to Black Lake water surface elevations.

to three-quarters of a mile from its present location under natural flow conditions or those comparable to operating Alverno as a run-of-river facility (BRLP, 1998). This would cause a loss of one-third of the fish producing (spawning) area of the lake and have significant adverse effects.

We agree with the WQC condition and the MDNR's recommendation to minimize the frequency and magnitude of turbine flow release changes and to operate the project in a run-of-river mode at all times possible, after achieving court-ordered Black Lake water levels. A run-of-river operation reduces residence time in hydro impoundments, which minimizes project effects on water quality and downstream habitats.

Between flows of 75 to 245 cfs, the WQC requires, and the MDNR recommends, the BRLP to release a minimum flow of 75 cfs downstream of the project, while maintaining Black Lake at court-ordered elevations. The Black River reach downstream of the Alverno dam is the backwater of the Cheboygan dam located approximately 5 miles downstream. Thus, only a small riverine reach exists downstream of the project to be potentially enhanced by increased minimum flows. Studies by the applicant showed that only minor differences in wetted perimeter occur during operating and non-operating conditions at Alverno. As such, a minimum flow of 75 cfs is unlikely to provide significant enhancement in habitat conditions, particularly because only a small river reach will be affected by the higher flows.

We agree with the MDNR that a minimum flow downstream of the project would provide benefits to fish and aquatic resources. However, we find a lower flow, perhaps in the 25 cfs range, would be sufficient for maintaining water quality and suitable habitat downstream of Alverno dam. A lower minimum flow would also enable releases to occur on a more continual basis, which would have greater benefits to fish and aquatic resources than releases of a higher minimum flow of 75 cfs, potentially, on a less than continual basis. In follow-up comments on the Section 10(j) meeting, the BRLP notes that the three year test period for determining operational compliance with 401 WQC conditions and recommended measures, and further ongoing consultation with resource agencies that would occur during that period, could be used to determine the practicality of minimum flow recommendations. In support of their recommendation, the MDNR notes that the goal for project operations at the Alverno Project is to operate the project in a run-of-river mode as often as possible within the constraints of maintaining Black Lake water surface elevations within the court-ordered levels. Commission staff acknowledged that a minimum flow of 75 cfs between inflows of 75 and 245 cfs is a condition of the 401 WQC and agrees that the practicality of this recommendation would be determined during its implementation during the three year test period.

We agree with the BRLP's proposal to install a third generating unit having a low flow capacity, as this would provide the means of releasing lower minimum flows of 25 cfs. A third, low-flow generating unit would also enable the BRLP to exert fine-scale control over Black Lake levels and minimize the magnitude of flow release changes, as recommended by the resource agencies. Improving control over Black Lake levels would limit the potential for lake level fluctuations known to disturb shallow water habitats to the detriment of fish production.

Flow and Operational Compliance

The MDEQ, MDNR, and Interior, collectively, provided a number of recommendations for compliance monitoring of project operations for the Alverno Project. We agree with the resource agency recommendations that river flow, impoundment elevation, and project operations monitoring is necessary at the Alverno Project. We agree with these recommendations because, being unlicensed, the Alverno Project has not been evaluated by the Commission for operational compliance. Information garnered for compliance monitoring will provide a means to compare environmental conditions in the Black River to operations at Alverno, which will aid in minimizing any potential adverse effects of the project on fish and aquatic resources.

We disagree with the resource agency recommendation for gaging and monitoring of Black River flows downstream of the project. The WQC conditions and the MDNR recommendations emphasize, as their highest priority, the maintenance of court-ordered water levels in Black Lake. As noted by the MDEQ and the MDNR, a store and release mode is necessary for achieving court-ordered Black Lake levels. It is unclear how downstream gaging would be used to ensure compliance with WQC conditions and the MNDR's recommendations, when the licensee has the discretion to flexibly operate the project to achieve court-ordered Black Lake levels. Because the MDEQ's WQC conditions and the MDNR's recommendation focus on achieving court-ordered water levels in Black Lake, gaging Black River flows downstream of Alverno dam would provide little benefit to operational compliance efforts. Because the tailwater of the Alverno Project is a backwater area of the downstream dam, the accuracy of any stream gage station in the tailrace would be questionable. As noted above, we do not agree with Interior's recommendation for an instantaneous run-of-river operation for the Alverno Project and we therefore do not support downstream gaging as part of a flow-based compliance standard for run-of-river operations. The MDEQ's 401 WQC condition for the licensee to engage in a three-year test period for operational compliance, in consultation with the resource agencies, would enable the full evaluation of the need for downstream gaging. The need for downstream gaging could be assessed during the test

period, and considered as an option for compliance if deemed necessary after or during the test period.

We also disagree with Interior's recommendation to establish and fund a USGS-type gage upstream of the project. The BRLP has noted that the operation of the Alverno Project, while affected by river discharge, is not linked directly to river discharge. The operation of the project is linked directly to the elevation of Black Lake. Gaging Black River flows upstream of the project, therefore, provides no additional benefit to compliance efforts. Using the equipment in-place, the BRLP has successfully operated the project to maintain Black Lake elevations within acceptable limits even with the existing constraints of the flow-dependent hydraulic control exerted by Smiths Rapids.

We agree with the MDNR's recommendation to record water surface elevation of Black Lake. Through an informal agreement, the BRLP has access to a lake water surface elevation gage located near the outlet of Black Lake. It is necessary that water surface elevation data for Black Lake be available to the licensee and resource agencies throughout the term of the license for the Alverno Project. Therefore, we recommend that in consultation with the resource agencies, the licensee: (1) formalize the agreement that provides the BRLP access to data from the existing Black Lake outlet gage; and (2) install and operate a similar gage, should data from the existing gage cease to become available.

We agree with the resource agency recommendation to install a staff gage on the upstream side of Alverno dam in a location clearly visible to the public. The WQC requires the licensee to record the Alverno impoundment level hourly, but we find this is excessive, given the project is staffed by one individual. Less frequent monitoring of staff gages would be sufficient for compliance monitoring. We agree with Interior's recommendation for an automated water surface elevation sensor for the Alverno headpond. An automated headpond water surface elevation sensor should provide the necessary hourly data, precluding the need to manually record water surface elevation on an hourly basis.

We also agree with Interior's recommendation to record project operations data, such as turbine flows. Project operations information coupled with gaging of the Black Lake and Alverno headpond water surface elevations will provide the necessary data to ensure the licensee complies with our recommended measures. We find a tailwater water surface elevation sensor, as recommended by Interior, is not necessary, because monitoring project operations and Alverno impoundment water surface elevation will be sufficient for operations compliance monitoring.

Our recommendations for monitoring of Black Lake water surface elevation, Alverno headpond elevation, and project operations, will aid in minimizing any potential adverse effects of the project on fish and aquatic resources.

We agree with Interior's recommendation to limit the Black Lake water surface elevation to plus or minus 0.25 feet. The applicant's proposed method of operating the Alverno Project, with the addition of a third, low-flow generating unit, would limit water surface elevation changes in Black Lake to plus or minus 0.05-feet. Minimizing water surface elevation fluctuations in Black Lake is necessary for ensuring that the extensive shallow-water habitat in the lake supports fish and aquatic resource production.

The WQC for the Alverno Project requires the licensee to provide a plan to monitor the flow of the Black River downstream of Alverno dam. The MDNR provided a more detailed recommendation for a gaging and compliance plan, without specifying which flows (project or river flows) should be monitored and at what locations. Interior also recommended the licensee develop an operations (run-of-river) compliance plan.

We agree with the resource agencies that the BRLP should develop and implement a gaging and flow compliance plan for the Alverno Project that includes gaging of Black Lake water surface elevation, monitoring water surface elevation in Alverno impoundment, and recording project operations data. We recommend that all automated gages be telemetered to enable resource agencies to access gage data for compliance monitoring. If telemetering is not feasible, we recommend the licensee evaluate other means of making gage data in electronic form easily accessible from remote locations; for example, posting data on the Internet on a daily basis, as per the MDNR's recommendation. We recommend that the gaging and flow compliance plan for the project include: (1) a timetable for consulting with resource agencies regarding installation of the recommended monitoring equipment; (2) protocols for recording monitoring data, such as pond elevations and turbine flow; (3) a reporting schedule for data collected on Black Lake water surface elevation, Alverno headpond water surface elevation, and project operations; and (4) a timetable for telemetering recommended equipment or making gage data accessible from remote locations in electronic form.

We agree with the WQC condition and the MDNR's recommendation to provide the licensee a three-year test period for determining feasibility of compliance with recommended flows and project operations. As noted above, being unlicensed, the Commission has not evaluated the Alverno Project for flow and operational compliance. Depending on the outcome of flow and operations compliance monitoring and evaluation, additional gaging can be recommended if it is determined to be needed to achieve or refine the modified run-of-river operation recommended for the Alverno Project. Our

recommendation for a gaging and flow compliance plan provides the necessary mechanism for continuing consultation on project operations and river flows at the Alverno Project.

The benefits of the MDNR's recommendation for the licensee to post interpretive signs near recommended gages and boat launches that describe the operation of the "reservoirs." are not clear. We find these signs to be unnecessary and potentially detrimental to flow compliance monitoring, as signs near gages could draw public attention, thereby increasing the potential for vandalism.

Fish Passage

The BRLP has proposed no measures to provide upstream fish passage at the Alverno Project and strongly opposes upstream fish passage at the project. Non-governmental organizations (NGO) including the Black Lake Association and Black Lake Sportsmans Club, and representatives of North Allis (Presque Isle County) and Grant (Cheboygan County) townships, commented in opposition to fish passage at Alverno dam. Collectively, these entities cite concerns over the potential for exotic species, including lamprey and zebra mussels, to invade Black Lake and negatively affect the lake's uniqueness and potentially the lake's sturgeon population. The BLA also argued that providing upstream passage at Alverno dam may enable genetically dissimilar lake sturgeon to spawn with the isolated Black Lake population to the detriment of the Black Lake population.

The MDNR, at this time, has not recommended upstream passage be provided at the Alverno Project. The MDNR requests that language be included in the Order Issuing License stating that a standard license re-opener may be used for unforseen future fish passage needs.

Our Analysis

We agree with the MDNR's recommendation to defer upstream passage at the Alverno Project, at this time. As noted, local entities have expressed concern over the potential negative effects resulting from the invasion of non-native species (*e.g.*, lampreys and zebra mussels) into Black Lake. We agree that upstream fish passage at Alverno could facilitate the introduction of exotic species into Black Lake and diminish the lake's productivity and desirable fisheries. It is possible for exotic aquatic species to be transferred to Black Lake through other means (*e.g.*, via watercraft) than direct migration through an upstream passageway at Alverno dam, if one existed. It is also possible to design upstream fish passageways to minimize the potential for exotic species to pass

upstream. However, we find the concerns of local entities regarding the potential negative effects of providing fish passage at Alverno dam to be well founded (Alevras and Whalen, 1993). We conclude that maintaining Alverno dam as a functional impediment to the invasion of exotic species would be the most effective way to protect the diverse and unique fisheries community present in Black Lake.

As the MDNR indicated during public scoping, there are significant potential benefits to passing lake sturgeon over Alverno dam, including reconnecting population elements isolated by Alverno dam, improving the spawning stock biomass, and enhancing genetic diversity through increases in effective population spawning size. Recent research has shown that the population of lake sturgeon inhabiting Black Lake is depleted and bordering on extirpation, if natural and fishing mortality rates are not reduced (Baker and Borgeson, 1999). For populations such as Black lake sturgeon, that are small, isolated, and declining in size, the failure to bolster effective population size could result in inbreeding depression and genetic drift and cause irreparable genetic harm (Hartl, 1988).

As the BLA indicated, the associated risk of providing upstream passage includes potential outbreeding effects, caused by introducing potentially genetically dissimilar lake sturgeon stock into Black Lake. The risk hinges on whether lake sturgeon originating downstream of the Alverno Project are sufficiently genetically similar to sturgeon in Black Lake so that providing downstream stock access to the upper Black River will have beneficial as opposed to negative effects. The genetic risks of introducing potentially dissimilar genetic stock into an isolated population is a primary concern identified in the State of Michigan's lake sturgeon rehabilitation strategy Hay-Chmielewski and Whelan, 1997). The MDNR noted during public scoping that the issue of genetic similarity of upstream and downstream sturgeon stock in the Black River has not been evaluated; therefore, the risks of upstream passage remain unresolved.

We reason that maintaining Alverno dam as an effective impediment to the upstream invasion of exotic species would have large benefits relative to the benefits of providing facilities for upstream passage for lake sturgeon at the project. In drawing this conclusion, we recognize that upstream passage of lake sturgeon at Alverno dam is not dependent on a fishway at the project. Independent of the Commission's licensing action for Alverno, trap and transfer of lake sturgeon from downstream to upstream of the project could be undertaken by the resource agencies. We acknowledge the BLA's objection to the transfer of lake sturgeon to areas upstream of Alverno dam, including Black Lake. However, the Commission's jurisdiction is limited to the facilities and operation of the Alverno Project and how lake sturgeon management relates directly to the project.

Although the MDNR is not recommending upstream fish passage be part of the Alverno Project license at this time, the Black River system remains a water body considered to have high potential for successful restoration of lake sturgeon (Hay-Chmielewski and Whelan, 1997). Because we anticipate lake sturgeon passage at Alverno dam to remain an issue of concern, we recommend the licensee cooperate with the MDNR and local NGOs in managing lake sturgeon in the Black River. We recommend the licensee consult with resource agencies regarding measures for enhancing lake sturgeon survival and production as they relate to the operation of the project (see McKinley *et al.*, 1993; Auer, 1996). The Commission has made similar recommendations for a licensee to cooperate with the resource agencies in managing lake sturgeon in the upper Black River, at the Tower and Kleber Project.

We find no basis to recommend a separate "standard license re-opener" be included in the Order Issuing License for the Alverno Project, as recommended by the MDNR. The MDNR may continue consultation on fish passage after license issuance through provisions of standard license articles. Interior also exercised its Section 18 authority to prescribe the construction, operation, and maintenance of any fishways deemed necessary at the Alverno Project.

Downstream Passage and Fish Protection

The applicant has agreed to pay $2,000 per year for fish losses stemming from entrainment mortality to a general fund for project-related enhancements in lieu of entrainment studies and installation of downstream protection devices.

The MDNR recommends the licensee install fish protection and downstream passage devices at the Alverno powerhouse. Within 12 months from the date of license issuance, the MDNR recommends the licensee develop and implement a fish protection and downstream protection plan to include:

(a) consultation with the resource agencies in the selection of a consultant experienced in analyzing, designing and installing fish protection and downstream passage devices and contracting with the selected consultant;

(b) evaluation of potential fish protection and downstream passage devices to prevent fish losses and provide for downstream migration of fish at the Alverno powerhouse, in consultation with and approval of the resource agencies of the devices selected for evaluation;

(c) the design of selected fish protection and downstream fish passage devices to prevent turbine entrainment and mortality at the Alverno powerhouse and provide for the downstream migration of fish, in consultation with and approval of the resource agencies;

(d) installation of the selected and approved fish protection and passage devices at the Alverno powerhouse, to be completed within 5 years of license issuance;

(e) development of operation and maintenance procedures for the selected devices, in consultation with and approval of the resource agencies;

(f) development and implementation of a protective device effectiveness study to determine residual losses, in consultation with the resource agencies; and

(g) completion of a residual damage assessment to determine if addition protective measures are warranted, or if not, compensation for all residual fish losses.

In the event the licensee cannot fund the installation of fish protection and downstream passage devices, the MDNR recommends the licensee, within five years of license issuance, establish an escrow account with annual contributions to fund fish protection and downstream passage at the Alverno powerhouse. The MDNR recommends that funding for fish protection and downstream passage be provided as soon as possible, but at least within 20 years of license issuance.

Interior recommends the licensee, in consultation with the resource agencies, develop a Fish Protection Fund (FPF) to escrow an initial and/or annual payment to finance appropriate fish protection measures to be installed in the intake areas of the Alverno Project. Interior recommends the level of funding be determined by mutual agreement between the licensee and the resource agencies. Interior recommends that: (1) any protection measures/devices installed shall be evaluated for their effectiveness; and (2) the licensee compensate the State of Michigan for any fish lost to turbine mortality occurring after the protection measures/devices have been installed.

Our Analysis

Fish moving downstream can be entrained into project intakes and suffer injury or death when passing through hydroelectric turbines (Electric Power Research Institute (EPRI), 1987). The applicant measured velocities immediately upstream of the intake of unit 2 at 70 and 100 percent gate opening. At 70 percent gate opening, the average water velocity over 16 measurements was 0.83 feet per-second (fps) and 1.26 fps at 100 percent

gate opening. From the bottom to the top of the intake, water velocities ranged between 0.3 and 1.3 fps at 70 percent gate opening and from 0.2 to 1.9 fps between the bottom and middle intake sections at 100 percent gate opening. Because localized areas of high velocity exist at the Alverno trashracks, entrainment of some fishes is likely to occur.

No entrainment studies were conducted at Alverno to directly estimate the magnitude of entrainment or mortality resulting from turbine passage. Although each hydro project has different physical and operating characteristics that influence entrainment rate and turbine passage survival (Federal Energy Regulatory Commission (FERC), 1995), general, qualitative characterizations are possible among projects because patterns in species composition and survival of entrained fish reoccur (EPRI, 1992; FERC, 1995).

Although entrainment catches may include a number of species, typically only several species dominate entrainment collections and the dominant fishes entrained usually represent species that are highly abundant (FERC, 1995). Top-level predatory fish (sportfish), such as smallmouth and largemouth bass, walleye, channel catfish, and northern pike, are collected in entrainment samples, but typically comprise only a small component of the catch relative to more abundant, forage fishes (*e.g.*, minnows and sunfish). Extensive sampling has also shown that the majority of fish entrained are small (less than eight inches) and experience low mortality resulting from turbine passage (about six percent; EPRI, 1992; FERC, 1995). At Alverno, the turbines have near full-depth trashracks consisting of steel grating having 1.25-inch bar spacing. The 1.25-inch width of the turbine trashrack would be an effective physical and (or) behavioral barrier to turbine entry for most large fish (greater than eight inches). Hence, most fish likely to pass through the trashracks and be entrained would be small fish (less than 8 inches) that would have a reasonably high probability of surviving (EPRI, 1992).

Consequently, although turbine entrainment and mortality at Alverno causes losses of resident fish, losses likely do not approach a magnitude that adversely affects fish populations. For Alverno, evidence supporting this conclusion is that the majority of resident fish populations in the project area are maintained through natural reproduction without direct intervention, such as stocking. Features of the life history of the local fishes, including early maturity, short generation time, and high fecundity (Scott and Crossman, 1973), may contribute to their resiliency to non-natural sources of mortality, such as those stemming from turbine entrainment. Research in impounded portions of large rivers has shown that year-class strength of common resident fishes is most influenced by large-scale abiotic factors, such as river water temperature and discharge during certain critical seasonal periods (Maceina and Bettoli, 1998; Maceina and Stimpert, 1998; Slipke *et al.*, 1998). Thus, for the common resident fish species found in

the Alverno Project area, large-scale environmental factors are more likely to affect population levels than the localized influence of turbine entrainment mortality.

Therefore, we do not find fish protection, as recommended by the resources agencies, to be necessary at the Alverno Project. The MDNR contends that failure to address turbine mortality at the project will negate the benefits of other recommended measures. We disagree. The Black River, including the Alverno impoundment, continues to be a normal functioning ecosystem in spite of the continual and likely small-scale loss of some resident fishes. Enhancements garnered from other resource agency recommendations, including those for bank stabilization, maintenance of court-ordered water levels in Black Lake, and a minimum flow, that maintain or improve the overall suitability of physical habitat, are likely to benefit a wider range of aquatic resources than would reducing the entrainment of some fishes.

The addition of a third generating unit, as proposed by the applicant, would increase entrainment at the Alverno Project. The third unit would have a singular trashrack, 7-feet deep by 8-feet wide, constructed of 0.25-inch steel bar having clear bar spacing of 1.25-inches. The third unit would draw only low flows in the 25 to 75 cfs range, have a small withdrawal zone, and low intake velocities. Staff conclude the addition of the third turbine would have minor adverse effects on the fish community in the Black River.

Lake Sturgeon

Juvenile lake sturgeon have been collected in entrainment samples at hydroelectric projects in the midwest (FERC, 1996). The MDNR noted during public scoping, that juvenile lake sturgeon dispersing downstream may be susceptible to entrainment and mortality at the Alverno Project. Our review indicates, however, that entrainment mortality of lake sturgeon at the Alverno Project is likely minimal.

The greatest downstream movement of juvenile lake sturgeon occurs within several weeks after spawning (Kempinger, 1988; LaHaye *et al.*, 1992). At this time, juveniles (larvae) are less than 1 inch in length, tend to drift passively with river currents, and exhibit punctuated downstream movements over a brief three to four week period. We suspect that the majority of sturgeon progeny produced at the spawning site on the upper Black River, upstream of Black Lake, would drift to and settle in Black Lake rather than pass downstream. We also suspect that any larvae continuing to drift through Black Lake and downstream to the Black River, would likely have a high probability of surviving turbine passage at the Alverno Project because of their small size.

After the larval stage, juvenile sturgeon are not know to make large scale, population-level habitat shifts; rather, downstream movements, when they occur, may be characterized as being exploratory or associated with individual seasonal habitat shifts. There is also evidence that downstream movements of juvenile sturgeon may be genetically based and therefore stock-specific (Thuemler, 1988). In these cases, the downstream movement of juveniles appear to be an adaptation facilitating the return of juveniles to rearing habitats occupied by older conspecifics. Because all sturgeon spawning upstream of Black Lake originate from upstream of Alverno dam, there is no adaptive basis for juveniles spawned in the upper Black River to migrate downstream of Alverno dam.

The decline in numbers of large sturgeon in Black Lake (Baker and Borgeson, 1999), and its presumed effects on juvenile production, would suggest that Black Lake is well below its carrying capacity for juvenile lake sturgeon. Hence, currently and for the foreseeable future, Black Lake will likely act as a "sink" for juvenile sturgeon, rather than as source of downstream migrants having the potential to be entrained at the Alverno Project.

For the reasons outlined above, we find that, at present, it unlikely that the entrainment and mortality of juvenile lake sturgeon at the Alverno Project has any substantial negative effect on the sturgeon population in the Black River. Therefore, we do not find that downstream passage protection is necessary for lake sturgeon at the Alverno Project, at this time. We recognize that existing and future management efforts may enhance the sturgeon population in Black Lake and increase the chance for downstream movements and turbine mortality of juvenile sturgeon at the Alverno Project. If in the future, high rates of entrainment and mortality of juvenile sturgeon are identified, we recommend the licensee consult and cooperate with the resource agencies to enhance downstream passage and minimize turbine entrainment.

Compensation and Restitution for Entrainment Losses

The MDNR provided an extensive overview of their position on compensation for fishes lost to entrainment at the Alverno Project. Staff concludes that turbine entrainment and mortality is not adversely affecting fish populations in the Black River and so we do not recommend a fisheries damage assessment or establishment of any escrow fund for fish losses. Further, fisheries damage assessments, as recommended by the resource agencies, are outside of the Commission's regulatory purview for the Alverno Project. We do not recommend the payment of damages for fisheries losses as a term or condition in any license issued for the Alverno Project.

Flow Continuation During Project Shutdown

Interior recommends that the BRLP pass river inflow within a few minutes through the Alverno Project in the event of project shutdown.

Our Analysis

We agree with Interior's recommendation regarding downstream flow provisions in the event of a shutdown of the Alverno Project. Decreases in water surface elevation coupled with a lack of flow in downstream riverine habitats that could occur if the project unexpectedly shutdown could have adverse effects on aquatic organisms. In follow-up comments to the Section 10(j) meeting, the BRLP reiterates that the riverbed of the tailrace does not dewater when no or minimal flow occurs at the Alverno Project. Maintaining flow through the project, however, is necessary for ensuring no adverse effects occur to water quality and thus aquatic resources in the event of a project shutdown. While staff acknowledge that the potential for adverse effects to occur during unexpected project shutdown events is likely minimal, we recommend that the applicant engage in reasonable measures to provide downstream flows to prevent adverse effects. We recommend that provisions for providing downstream flow in the event of a project shutdown be included as part of the gaging and flow compliance plan recommended above for the project.

Reservoir Drawdowns

The BRLP proposed to continue pre-high-flow drawdowns to provide high-flow abatement benefits to shoreline property owners on Black Lake and along the Alverno impoundment.

The MDNR recommends that the BRLP provide notification at the earliest possible opportunity (*i.e.*, within 24 hours), of any proposed or already completed emergency flowage drawdown done to prevent dam failure and (or) imminent risk to public health and safety. The MDNR recommends that the BRLP: (1) consult with the MDNR to determine the amount, if any, of resource damage and appropriate response measures and proposed remedial measures, mitigation and appropriate methodology and timing of the flowage level restoration; and (2) obtain necessary Departmental permits for all reservoir drawdowns (and refills) for dam maintenance purposes that exceed one foot.

Interior's recommendations regarding emergency and controlled reservoir drawdowns are, in essence, the same as those detailed by the MDNR. In addition, Interior recommends the licensee prepare a plan to coordinate with the MDNR and FWS on all

emergency and maintenance drawdowns. For planned non-emergency drawdowns, Interior additionally recommends that the licensee: (1) consult with the resource agencies to minimize potential adverse environmental effects; (2) provide at least two months advance notice of any proposed drawdown; and (3) avoid conducting drawdowns during the months of March, April, May, and June.

Our Analysis

The timing, duration, and rate of drawdowns can have significant adverse effects on aquatic biota and their habitats. Drawdowns may strand fish, mussels, and aquatic insects, and disrupt their life cycles.

We agree with the resource agency recommendations for the BRLP to provide sufficient prior notification of drawdowns to enable consultation with the resource agencies to minimize the effects of drawdowns other than those associated with an imminent public safety issue. Providing maximum notice for the need for planned drawdowns will allow a thorough evaluation of the possible effects of the drawdown, which will increase options for minimizing potential adverse effects.

We agree with Interior's recommendation that drawdowns for project maintenance should not be scheduled from March through June. Many fishes found in the projects' impoundments spawn in nearshore areas from March through June. Larval and juvenile fishes, or those individuals with poor swimming ability, may also be present at this time in nearshore areas. Large-scale dewatering of the littoral zone during the March through June period could have significant adverse effects on fish spawning success and recruitment.

The applicant proposes to continue to conduct pre-high flow drawdowns of the Alverno impoundment to provide flood abatement benefits to the Black River community. The MDNR has expressed concern that drawdowns may affect aquatic and terrestrial resources in the impoundment and downstream areas. During high flow events, the BRLP communicates with operators at the Tower and Kleber Project on the upper Black River to determine inflows into Black Lake. In turn, operations are adjusted at Alverno to decrease the elevation of the Alverno impoundment to minimize flooding of shorelines in both Black Lake and the Alverno impoundment. Because the BRLP's pre-high flow drawdowns of the Alverno impoundment are, in part, necessary to maintain court-ordered Black Lake elevations, pre-high flow drawdowns are consistent with the project's WQC.

We recommend that the BRLP consult with the resource agencies to develop a reservoir drawdown management plan that identifies protocols for coordinating planned

drawdowns. We recommend that the BRLP formalize their high flow operating procedures as part of the reservoir drawdown management plan. Our recommendations will minimize the potential for both site-specific and cumulative adverse effects to occur to Black River aquatic resources as the result of reservoir drawdowns.

Natural Organic Debris

The BRLP proposes to pass downstream woody debris collecting on the project's trashracks that is cleared during normal operation and maintenance, by constructing a sluiceway at the project.

The MDEQ included a condition in the WQC for the licensee to develop and implement a program to pass natural organic vegetative debris (logs, stumps, sticks, limbs, leaves, and aquatic vegetation) collected on the trashracks and log booms over the Alverno dam in a manner that will not create a navigational hazard. The MDNR makes a similar recommendation for the licensee to develop and implement a plan, in consultation with the resource agencies, to pass natural organic debris over the Alverno dam, within 12 months of license issuance.

Our Analysis

Organic debris that is naturally recruited into rivers from riparian areas provides habitat for macroinvertebrates and fish (Todd and Rabeni, 1989). Organic debris sustains lower order trophic organisms and in-turn, influences the productivity of the Black River for higher order organisms. The passing of large woody debris would improve habitat structure downstream of the project and enhance the carrying capacity of the Black River for macroinvertebrates and juvenile and adult fishes. Therefore, we agree with the MDEQ WQC condition, and the MDNR's recommendation, for the licensee to pass organic debris downstream, as this would benefit the Black River ecosystem.

We agree with the resource agency recommendation for the licensee to develop and implement a plan, in consultation with the resource agencies, to pass woody debris downstream and submit the plan for Commission approval. We recommend that the BRLP consult with the resource agencies on their plans for constructing a sluiceway to pass organic debris, and file the plans with the Commission for approval.

We presume that any large woody debris accumulating on the spillway or log boom would be mobilized naturally by high flow events. Such a scenario simulates patterns of mobilization of larger vegetative matter in natural, unregulated streams (Berg *et al.*, 1998). Therefore, we find it unnecessary to require the licensee to move downstream,

woody debris accumulating on the either the dam spillway or log boom. We recommend the woody debris management plan for the Alverno Project focus on moving downstream woody debris accumulating on the project's trashracks.

c. Cumulative effects

Cumulative effects on fisheries in the Black River could occur through the operation of the Alverno Project. We defined the geographical boundary of our cumulative effects analysis as portions of the Cheboygan River watershed as follows: Burt and Mullet lakes, and associated riverine reaches of the inland waterway system, the Black River, from its confluence with the Cheboygan River to Black Lake, and the upper Black River, upstream to the Kleber development (Figure 1). This geographic scope defines the physical limits or boundaries of the proposed action's effects on potamodromous lake sturgeon inhabiting the Cheboygan River watershed as well as lake sturgeon originating in Lake Huron that may use the watershed for spawning and rearing of juveniles. Operation of the Alverno Project, along with the Tower and Kleber Project, and the presence and operation of other non-hydro dams, could cumulatively affect habitat availability and upstream and downstream movements of juvenile and adult lake sturgeon.

At present, without fish passage, the Alverno Project acts as a barrier to upstream passage of adult lake sturgeon originating from downstream areas. No suitable spawning sites are known to exist in the Cheboygan River watershed downstream of Alverno dam. Hence, the loss of juvenile recruitment stemming from a lack of passage at the project could contribute to the ongoing diminishment of downstream sturgeon populations, caused cumulatively by a lack of suitable habitat, over-fishing (illegal take), migratory barriers, and other factors. However, because uncertainty exists regarding the genetic uniqueness of upstream versus downstream populations, the current lack of upstream passage at the project may also be preventing adverse cumulative effects to the upstream population. Due to this present uncertainty, we conclude that licensing the Alverno Project would not contribute to adverse cumulative effects on sturgeon populations, if as we recommend, the licensee cooperates with efforts to enhance lake sturgeon in the Black River.

Operation of the Alverno Project could also contribute to adverse cumulative effects on fish mortality in conjunction with entrainment and mortality occurring at the Tower and Kleber hydro developments. Although resident fishes are entrained and killed by passage through the Alverno Project's turbines, as we reviewed above, the losses do not appear to adversely affect Black River fish populations. We conclude that the project

does not appreciably contribute to adverse cumulative effects on fisheries resources in the Black River.

At the present time, no anadromous fishes are present in the upper Black River so cumulative adverse effects of the Alverno Project on anadromous fishes are absent.

d. Unavoidable adverse effects

Some fish would continue to be lost to turbine entrainment mortality throughout the term of the license.

4. Terrestrial Resources

a. Affected environment

The area primarily affected by the project includes the reservoir that extends upstream to Smiths Rapids and a short distance of tailrace downstream of the dam. A large variety of birds and small and large mammals can be found in the project area.

Vegetation of the surrounding lands consists primarily of white and black spruce. Balsam fir, sugar and red maple, big tooth and quaking aspen, eastern white pine, red pine, and northern white cedar. In addition there are ornamental and non-natural trees that have been planted along the shoreline in the residential areas. The shoreline also supports a variety above the waterline in the non-residential areas. Bulrushes and cattails are present in and below the waterline for almost the entire length of the shoreline around the impoundment.

The BRLP contacted the MDNR to determine if any terrestrial species were listed by the State as threatened, endangered, or of special concern. No terrestrial species were identified by the MDNR (letter from Lori G. Sargent, Endangered Species Specialist, Department of Natural Resources, Lansing, Michigan, November 26, 1997)

b. Environmental effects and recommendations

The MDNR in it's March 24, 2000, Section 10(j) letter, recommends that the BRLP develop and implement a wildlife management plan that includes provisions for: (1) biennial consultation on the status of wildlife populations and measures to protect wildlife; (2) protection and enhancement of habitat for threatened, endangered, or sensitive species on project land; (3) protection of environmentally sensitive areas on project lands; (4) protecting riparian buffer strip along project lands adjacent to the

reservoir and riverine sections; (5) a vegetation management plan; and (6) nesting structures. In it's March 27, 2000, Section 10(j) letter Interior also recommends a wildlife management plan which would include provisions for providing nesting structures and planting vegetation to enhance habitat. As part of the plan the BRLP should monitor wildlife populations and annually consult with the resources agencies for the purposes of determining the effectiveness of the enhancement measures.

Our analysis

The measures recommended by the MDNR and Interior should provide a greater level of enhancement for a greater number of wildlife species than currently exist. Although agency-recommended measures should provide a greater level of wildlife enhancement, several measures seem excessive or would provide limited benefit. Specifically, Interior's recommendations for planting vegetation to enhance habitat and annual monitoring and consultation, and the MDNR's recommendation for a vegetative management plan, seem inappropriate for the small amount of project lands located at the impoundment.

Development of a wildlife management plan, incorporating measures from Interior and the MDNR, with consideration of modifications, would provide for wildlife enhancement in the project area. However, the development of any plan should be done in consultation with the MDNR and Interior and involve a closer evaluation of site values and limitations before finalizing the types and extent of enhancements. The number of nesting structures and their locations should also be addressed in the plan. We recommend that any license issued for this project include provisions for preparing and implementing a wildlife management plan.

Threatened and Endangered Species

The BRLP contacted the U.S. Fish and Wildlife Service (FWS) to determine if there are any threatened or endangered species that may exist in the project area. The FWS has determined that there are presently no federally listed threatened, endangered or proposed species in the project area. This precludes the need for further action on this project as required by the Endangered Species Act of 1973, as amended. However, consultation with the USFWS should be initiated if the project is modified or new information about the project becomes available that indicates listed or proposed species may be present and/or affected or if, during the term of the license, any species occurring in the project area become federally listed or proposed for listing (letter from Michael T. Chezik, Regional Environmental Officer, U.S. Department of the Interior, Office of the

Secretary, Philadelphia, Pennsylvania, March 27, 2000). Thus further consultation is not required.

5. Recreation and Land use

a. Affected environment

The Alverno Project is located in Cheboygan County in northeast Michigan within an hour drive from Lakes Michigan and Huron. There are many recreational opportunities including snowmobiling, boating, fishing, cross country skiing, hiking, and camping. The region has an extensive system of connecting inland lakes and rivers, which allows boaters to navigate through Mullett and Burt lakes, and access several towns. In addition, the Michigan State Park system has several recreation areas located in Cheboygan County that are associated with Lakes Michigan and Huron.

The most popular recreation activities at the project are fishing and boating. To support these activities, the BRLP maintains recreational facilities at the impoundment. They consist of two boat launches, one into the impoundment that allows boat traffic to travel upriver into Black Lake, and second boat launch in to the river below the tailrace, which allows access to the Cheboygan River and numerous other inland lakes and rivers to the north and west, as well as access into Lake Huron on the east. The boat launches also serve as a canoe portage around the dam. A fishing area with picnic facilities is located adjacent to the tailrace near the powerhouse. Parking is also provided at the powerhouse and both boat launches.

A total of 1,500 feet of shoreline is available for fishing. Existing fishing access is provided along the east side of the reservoir and along the east side of the tailrace and down the river channel. The southeastern bank of the impoundment near the powerhouse is inaccessible because of high steep banks extending from near the dam upstream onto private property. The western bank from the dam upstream is all private property. Expect for the fenced hazardous areas of the dam and powerhouse, all property owned by the applicant is available to the public for recreational use.

The predominate land uses in the project area are agriculture and forest. The land around the project impoundment is all privately owned including some residences.

b. Environmental effects and recommendations

The applicant proposes to provide new parking and fishing areas, and a restroom facility that are accessible for people with disabilities. Further, the BRLP proposes to provide additional shoreline protection at the fishing sites and canoe portage.

The MDNR in the it's March 24, 2000, letter, recommends that the BRLP provide directional signage from major roadways so that recreationists can more easily find the project and it's associated recreational opportunities and a fishing pier for access to the reservoir. The MDNR recommends that all the recreation facilities (boat launches, tailrace and reservoir fishing sites) be accessible for people with disabilities and maintained for year around access. Further, the MDNR recommends that the boat launch on the impoundment be functional at all ice-free elevations.

Our analysis

The applicant's proposal includes plans to improve the existing recreation sites so that they are accessible for people with disabilities, and provide a restroom facility is consistent with the MDNR's recommendation. We concur with this proposal and recommend that any license issued for the project require that the BRLP prepare a recreation management plan that includes provisions for improving accessibility, and installing a restroom. We do not agree with the MDNR's recommendation to provide maintenance so that the sites are accessible year round. Requiring the BRLP to provide access for recreationist during the winter months is not necessary. Currently, the county maintains most of the road used to access the impoundment and recreationist can access the impoundment area at any time of the year. The MDNR did not provide evidence that the current situation is not adequate.

In summary, the applicant's completed and proposed improvements will enhance boating, fishing, and accessibility for people with disabilities. The measures to enhance opportunities seem justified and appropriate. We recommend that the BRLP, in consultation with the MDNR, and FWS, prepare final details and a schedule to construct the remaining recreational facilities as part of the recreation management plan and submit the plan for Commission approval. The plan should include a proposal for directional signage to inform users of the project's recreational opportunities.

The applicant proposes no specific land management measures. The MDNR recommends that the BRLP maintain all current land within the project boundary and manage these lands using a comprehensive land management plan (CLMP). The plan shall be reviewed and updated, if necessary, on a biennial basis in consultation with the

resource agencies. The MDNR further, recommends that any proposal to withdraw lands that are within the project boundary or restrict public access to these lands shall be reviewed by the MDNR prior to approval by the Commission.

Maintaining ownership of protect lands and maintaining lands adjacent to the project's impoundment and tailwater through a CLMP would provide additional protection for project lands by providing a unified approach for addressing land development and conservation needs. However, the Alverno Project has minimal project lands consisting of the lands surrounding the powerhouse, existing recreation areas, and lands downstream of the tailrace. Much of the existing shoreline along the project's impoundment is in private ownership and the impoundment's westside is bordered by private residents. The BRLP has not proposed to sell any project lands. Modifications of project lands would require Commission approval after consultation with agencies. As such, we do not consider a CLMP, including specific provisions for the licensee to maintain ownership of project lands, to be necessary for the Alverno Project.

c. Unavoidable adverse effects

None.

6. Aesthetic Resources

The characteristic landscape surrounding the Black River from Black Lake to downstream of the dam is primarily rural and agricultural. More intense residential development exists along the river. The area surrounding Black Lake is a mixture of forested area, wetlands and agricultural with a significant residential development immediately adjacent to the shoreline.

The applicant does not propose to materially alter the operating scenario at the project site, the existing conditions and resources will not be altered or affected by the proposed operation under the proposed action. The BRLP also partakes in an ongoing process to maintain the condition of the Alverno Project facilities, which directly improves their appearance. Any refurbishment or construction activities associated with the installation of a third generating unit or recreation facilities would have a minor, short-term adverse effect on the visual resources of the project area.

7. Cultural Resources

a. Affected environment

The original dam was constructed at the site in 1905. It consisted of a rock filled timber crib dam with a gated spillway, a log sluice, a boat dock, and a powerhouse. In 1918 the original powerhouse was demolished and the current powerhouse was constructed. Between 1920 and 1985 various modifications and improvements were made to the dam, including the filling of all timber crib structures and converting the dam to an earth fill facility with a steel sheet piling cutoff wall on the upstream side. The State Historic Preservation Officer (SHPO) states that the above ground structures at the Alverno hydroelectric plant complex are not eligible for listing in the National Register of Historic Places and no further evaluation if the structures is necessary (letter from John R. Halsey, State Historic Preservation Officer, State Historic Preservation Office, Lansing, Michigan, December 3, 1997). Staff concurs with this determination.

The Michigan SHPO states that a fair amount of archaeological survey has been conducted along both the Black River and in the surrounding region to the northwest of the dam. No sites were found during those surveys. In addition, the shoreline behind the dam has been altered relative to the original shoreline. Due to these factors, the SHPO concludes that no historic properties exist within the area of potential effects for the project (letter from Brian D. Conway, State Historic Preservation Officer, State Historic Preservation Office, Lansing, Michigan, August 3, 1998). Staff concurs in this determination.

b. Environmental effects and recommendations

If archeological or historic sites are discovered during project operation or while constructing the recreation facilities, the Applicant should: (1) consult with the SHPO about the discovered sites; (2) prepare a site-specific plan, including a schedule, to evaluate the significance of the sites and to avoid or mitigate any impacts to sites found eligible for inclusion in the National Register of Historic Places; (3) base the site-specific plan on recommendations of the SHPO, and the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation; (4) file the site-specific plan for Commission approval, together with the written comments of the SHPO; and (5) take the necessary steps to protect the discovered archeological or historic sites from further impact until notified by the Commission that all of these requirements have been satisfied.

D. No-Action

Under the no-action alternative, the BRLP would continue to operate the project and there would be no change to the existing environment. No measures to protect,

mitigate, or enhance existing environmental resources would be implemented.

VI. DEVELOPMENTAL ANALYSIS

In this section, we analyze the project's use of the Black River's available water resources to generate hydropower; estimate the economic benefits of the proposed project; and estimate the cost of various environmental protection, mitigation, and enhancement measures and the effects of these measures on project operations.

A. Power and Economic Benefits of the Project

Our independent economic studies are based on existing electric power conditions, with no considerations for future inflation, escalation, or deflation beyond the potential license issuance date.[34]

We base the net investment cost for the project on the undepreciated blue book value provided by the applicant. For our economic analysis of the alternatives, we use the assumptions, values, and sources shown in table 2.[35] The proposed action consists of the operation of the Alverno Project with the BRLP's proposed environmental and safety measures as shown in table 3.

Based on the assumptions in table 2 and the costs of enhancements shown in table 3, we estimate that the annual cost of the Alverno Project would be $85,000, or about $34,000 (8.45 mills/kWh) less than the annual power value of $119,000. The estimated

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[34]See Mead Corporation, Publishing Paper Division, 72 FERC ¶61,027 (July 13, 1995).

[35]Our estimate of the cost of alternative power is based on the current cost of energy generation in natural gas-fueled combined cycle combustion turbine (CCCT) generating plants in the ECAR region, plus a value of $109 per kilowatt year for the project's average annual capacity of 1,000 kW. We compute the regional energy value to be 17.34 mills/kWh and the capacity value to be 12.43 mills/kWh, for a total power value of 29.77 mills/kWh. Our estimate of the energy value is based on the cost of fuel that would be displaced by the hydroelectric generation in a natural gas-fueled CCCT generating plant, operating at a heat rate of 6,200 Btu/kWh. We estimate the cost of fuel based on the Energy Information Administration's reference-case estimate of average real fossil fuel costs for electric utilities, as published by the Energy Information Administration (EIA) in their Annual Energy Outlook for 1998 and its supplemental data on the EIA Internet Homepage.

average annual output of the project would be 4,000 MWh.

Table 2. Staff's assumptions for economic analyses of the Alverno Project (Source: Staff)

Assumption	Value	Source
Energy value (2000)	17.34 mills/kWh	Staff
Capacity value (2000)	$109/kW-yr	Staff
Operation & maintenance costs (1999)	$58,500.00	BRLP
Period of analysis	30 years	Staff (Mead)
Discount rate	10%	Staff
Net investment	$552,100.00	BRLP

Table 3. Summary of annual costs of BRLP's proposed enhancements for the Alverno Project (Source: Staff)

Protection, mitigation, or enhancement measure	Capital cost (2000$)	O&M cost * (2000$)	Annual cost (2000$)
Third turbine/generator	$200,000	0	$21,200
Entrainment mortality compensation	0	0	$2,000
Bank stabilization program	$2,500	0	$265
Construct and operate sluiceway	$10,000	$200	$1,260
New parking and fishing areas with restrooms and canoe portage	$8,700	$300	$1,200

* O&M cost for third generating unit is included Table 2 O&M assumptions

B. Proposed Action with Additional Staff-recommended Measures

In this section, we present the annual costs of the proposed action with the staff's recommended measures. Table 4 shows the annual costs of enhancements for staff-recommended measures.

Based on these assumptions, we estimate that the annual cost of the proposed action with the staff's recommended measures would be about $87,000, or about $32,000

(7.96 mills/kWh) less than the annual power value of $119,000. The estimated average annual output of the project would be 4,000 MWh.

Table 4. Summary of annual costs of enhancements of the staff and agency-recommended measures for BRLP's proposed Alverno Project (Source: Staff)

Protection, mitigation, or enhancement measure	Capital cost (2000$)	O&M cost (2000$)	Annual cost (2000$)
Water quality monitoring program	$72,000	0	$7,640
gaging and flow compliance monitoring plan	$10,000	$1,000	$2,060
Reservoir drawdown management plan	$1,500	0	$159
Natural organic debris management plan	$5,000	0	$530
Wildlife management plan	$2,000	$300	$512

C. No-action

Under the no-action alternative, the project would continue to operate as it does now, with no change in existing environmental conditions.

The annual cost of the existing project, is about $81,000.00 (21.29 mills/kWh) for the existing generation of about 3,800 MWh annually. As stated above, we assume that the cost of alternative power is 29.77 mills/kWh. Therefore, the existing project would produce power at a cost of about $32,000 (8.50 mills/kWh) less than the currently available alternative.

D. Economic Comparison of the Alternatives

Table 5 presents a summary of the current net annual power benefits for no action, the proposed action, and the proposed action with additional staff-recommended measures.

Table 5. Summary of the net annual benefits of alternatives for BRLP's proposed Alverno Project (Source: Staff)

	BRLP's Proposed action	Proposed action with additional staff-recommended measures	No action
Annual generation (MWh)	4,000	4,000	3,800
Annual power benefit			
($)	119,000	119,000	113,000
(mills/kWh)	29.77	29.77	29.78
Annual cost [a]			
($)	85,000	87,000	81,000
(mills/kWh)	21.32	21.80	21.29
Annual net benefit			
($)	34,000	32,000	32,000
(mills/kWh)	8.45	7.96	8.5

Project economics is only one of the many public interest factors that is considered in determining whether or not to issue a license. The construction and operation of a project may be desirable for other reasons, such as to diversify the mix of energy sources in the area, to promote local employment, to provide a fixed-cost source of power and reduce contract needs, and to conserve fossil fuels and reduce atmospheric pollution.

E. Pollution Abatement

The Alverno Project would annually generates about 4,000 MWh of electricity. This amount of hydropower generation, when contrasted with the generation of an equal amount of energy by fossil-fueled facilities, avoids the unnecessary emission of atmospheric pollutants. Assuming that the 4,000 MWh of hydropower generation would be replaced by an equal amount of natural gas-fired generation, generating electrical power equivalent to that produced by the Alverno Project would require combustion of about 41.2 million cubic feet of natural gas annually. Removal of pollutants from the emissions to levels presently achievable by state-of-the-art technology would cost about $2,217.00 (1999 $) annually.

VII. COMPREHENSIVE DEVELOPMENT AND RECOMMENDED ALTERNATIVE

Sections 4(e) and 10(a) of the FPA require the Commission to give equal consideration to all uses of the water way on which the project is located. When we review a hydropower project, we consider the water quality, fish and wildlife, recreational, cultural and other nondevelopmental values of the involved waterway equally with its electric energy and other developmental values. In determining whether, and under what conditions, to license a project, the Commission must weigh the various economic and environmental tradeoffs involved in the decision.

This section contains the basis for, and a summary of, our recommendations to the Commission for licensing the Alverno Project. We weighed the costs and benefits of our recommended alternative against other proposed measures.

A. Recommended Alternative

Based on our independent review and evaluation of the proposed project, the proposed action with additional staff-recommended measures, and no-action, we select the proposed action with our recommended alternative as the preferred alternative.

We recommend this alternative because: (1) issuance of a license would allow the BRLP to continue to operate the project as a dependable source of electric energy; (2) the 1,100-kW project would avoid the need for an equivalent amount of fossil-fuel fired electric generation and capacity, continuing to help conserve these nonrenewable energy resources and reduce atmospheric pollution; and (3) the recommended environmental protection, mitigation, and enhancement measures would improve water quality, protect fish and terrestrial resources, improve public use of recreation facilities and resources, improve multiple use and management of project lands, and maintain and protect historic and archeological resources within the area affected by project operations.

We recommend including the following environmental measures in any license issued by the Commission for the Alverno Project:

(1) operate the Alverno Project in a manner consistent with the State of Michigan's water quality standards set forth in the 401 Water Quality Certificate;

(2) in consultation with the resource agencies, develop and implement a water quality monitoring program the fifth year after license issuance and every five years thereafter;

(3) consult with resource agencies before performing any activities which may cause a significant mobilization of sediments;

(4) operate the project in a modified run-of-river mode to maintain the water surface elevation of Black Lake within court-ordered levels;

(5) develop and implement a gaging and flow compliance monitoring plan, in consultation with the resource agencies, including monitoring Black Lake water surface elevation, Alverno impoundment water surface elevation, and project operations;

(6) cooperate with the resource agencies and NGOs in the management of lake sturgeon in the Black River;

(7) develop and implement provisions to immediately provide flow to downstream reaches in the event of a project shutdown;
;

(8) develop and implement a reservoir drawdown management plan, in consultation with the resources agencies, to prevent adverse effects on aquatic resources from planned reservoir drawdowns for project maintenance;

(9) develop and implement a natural organic debris management plan, in consultation with the resource agencies, focusing on passing debris downstream of the project, to enhance habitat resources in the Black River;

(10) develop and implement a wildlife management plan, in consultation with the resource agencies, focusing on nesting structures, habitat enhancement, and vegetation management;

(11) develop and implement a shoreline erosion control plan, in consultation with the resource agencies, for the Alverno impoundment;

(12) development and implement a recreation management plan, in consultation with the MDNR, focusing on enhancing existing facilities; and

(13) reserve authority for the Secretary of the Interior to prescribe the construction, operation, and maintenance of fishways.

Because our recommendations for water quality monitoring, and plans for operations gaging and compliance, reservoir drawdown management, natural organic debris management, and a wildlife management represent tradeoffs between developmental and non-developmental resources, we present our justification for these measures and a comparison of the alternatives in the following section.

Implementation of these measures would protect and enhance water quality, fisheries and wildlife, and recreational resources in the project area and provide for the best use of the waterway.

The costs of some of these measures would reduce the net benefit of the project. As discussed in section VI, we estimate that the project as proposed by the BRLP would cost $85,000. Specifically, five of our additional recommended measures would further reduce the economic benefits of the project. These include the development and implementation of plans for: (1) monitoring water temperature and DO at the project; (2) gaging and compliance for operations monitoring; (3) reservoir drawdown management; (4) natural organic debris management plan; and (5) wildlife management. The staff recommended release of a minimum flow of 25 cfs downstream of Alverno dam are within the hydraulic range of the proposed third turbine. Thus this recommendation will not affect project costs.

1. Water Quality Monitoring

The WQC requires, and the resource agencies recommend, the licensee develop and implement a water quality monitoring plan that includes continuous monitoring of DO and water temperature upstream and downstream of the project. A water quality monitoring plan will provide benefits to the Grand River environment by ensuring that water quality at the project remains supportive of a healthy aquatic community.

We recommend that the BRLP monitor water temperature and DO every fifth year following the issuance of a license for the Alverno Project. We estimate that the current annual cost of developing and implementing a plan to monitor water temperature and DO at the project would be about $7,640.

2. Operations Gaging and Compliance Plan

The WQC requires, and the resource agencies recommend, that the BRLP monitor project operations, including funding for monitoring Black Lake and Alverno impoundment water surface elevations, project operations, and establishment of USGS flow gages. Because the suitability of aquatic environments could be adversely affected

by inconsistent flow releases and water surface elevations, compliance with our recommended operating mode and water surface elevation management regime should be monitored.

We recommend that the BRLP develop and implement an operations gaging and compliance plan, for measuring Black Lake and Alverno impoundment water surface elevations and project operations data. Because the funding and installation of a USGS type gage downstream of Alverno dam is a requirement of the WQC, we recommend that the BRLP include this as part of the operations gaging and compliance plan. We estimate that the current annual cost of this monitoring and documentation of compliance with our recommended operating mode and water surface elevation regimes would be about $2,060.

3. Reservoir Drawdown Management Plan

Both the MDNR and Interior recommend that the licensee develop and implement a reservoir drawdown plan that includes consulting with the agencies to minimize resource damage, timing of flowage restoration, and to obtain necessary permits.

We recommend that the BRLP consult with the resource agencies to develop a reservoir drawdown management plan that identifies protocols for coordinating planned drawdowns with the resource agencies. We recommend that the BRLP formalize their high flow operating procedures as part of the reservoir drawdown management plan. Our recommendations will minimize the potential for both site-specific and cumulative adverse effects to occur to Black River aquatic resources as the result of reservoir drawdowns. The estimate that the annual costs associated with consulting would be minimal. We estimate that the current annual cost of coordinating with the agencies would be about $159.

4. Natural Organic Debris Management Plan

The applicant proposes to pass downstream woody debris collecting on the project's trashracks that is cleared during normal operation and maintenance by constructing a sluiceway at the project. The MDNR makes a similar recommendation for the licensee to develop and implement a plan, in consultation with the resource agencies, to pass natural organic debris over the Alverno dam.

We agree with MDNR's recommendation for the licensee to develop and implement a plan, in consultation with the resource agencies, to pass woody debris downstream and submit the plan for Commission approval. We recommend that the

BRLP consult with the resource agencies on their plans for constructing a sluiceway to pass organic debris. The estimate that the annual costs associated with developing and implementing the plan would be about $530.

5. Wildlife Management Plan

Both the MDNR and Interior recommend that the BRLP develop and implement a wildlife management plan, in consultation with the resource agencies, that includes provisions for nesting enhancements for waterfowl, osprey, purple martin eastern bluebrids, and bats and vegetation and buffer strip management. This will benefit terrestrial resources in the project area by improving habitat suitability and, thus, providing for the enhancement of wildlife populations.

We recommend the licensee develop and implement a wildlife management plan for project lands, including the installation of nesting structures, vegetation planting to benefit wildlife, and protecting riparian buffer strip along project lands. We estimate that the current annual cost of developing and implementing a wildlife management plan would be about $512.

B. Conclusion

Based on our independent analysis of the Alverno Project, we conclude that operation of the project with our recommended protection, mitigation, and enhancement measures would improve environmental conditions in the project area and would be a beneficial use of the resources.

VIII. RECOMMENDATIONS OF FISH AND WILDLIFE AGENCIES

Under the provisions of Section 10(j) of the FPA, each hydroelectric license issued by the Commission shall include conditions based on recommendations provided by federal and state fish and wildlife agencies submitted to adequately and equitably protect, mitigate damages to, and enhance fish and wildlife resources affected by the project, to the extent that such conditions are consistent with the FPA and other applicable law.

Section 10(j) of the FPA states that, whenever the Commission believes that any fish and wildlife agency recommendation is inconsistent with the purposes and the requirements of the FPA or other applicable law, the Commission and the agency shall attempt to resolve any such inconsistency, giving due weight to the recommendations, expertise, and statutory responsibilities of the agency.

Pursuant to Section 10(j) of the FPA, we made a preliminary determination that four of the recommendations of the fish and wildlife agencies may be inconsistent with the purposes and requirements of Part I of the FPA or other applicable law for the following reasons:

(1) Interior's recommendation to operate the project in an instantaneous run-of-river mode at all times (with no hydro peaking) would cause Black Lake water surface elevations to range outside of court-ordered limits and have negative effects on habitat for fish and aquatic resources.

(2) Interior's recommendation to construct, maintain, and fund USGS flow gaging stations upstream and downstream of Alverno dam to measure inflow and discharge is not necessary, because compliance with the recommended operating regime will be determined using water surface elevation data from Black Lake and Alverno impoundment and project operations data.

(3) Interiors recommendation to maintain compliance with run-of-river operation by having no more than a 10 percent difference in discharge upstream and downstream of the project is unnecessary, because we do not recommend a strict run-of-river operation for the project because it would have significant adverse effects on fish and aquatic resources in Black Lake.

(4) The MDNR's recommended minimum flow downstream of the project of 75 cfs, between inflows of 75 and 245 cfs, is unnecessary for maintaining and enhancing aquatic resources downstream of the project. We find a lower minimum flow in the 25 cfs range would be sufficient for maintaining water quality and suitable habitat in the small riverine reach downstream of Alverno dam. A lower minimum flow would also enable releases to occur on a more continual basis, which would have greater benefits to fish and aquatic resources than releases of a higher minimum flow of 75 cfs, potentially, on a less continual basis.

Pursuant to Section 10(j) of the FPA, Commission staff consulted with the Federal and state resource agencies in an attempt to resolve the remaining conflicts between the requirements of the FPA and the resource enhancement measures of the state and Federal agencies. Commission staff and the MDNR clarified issues related to project operations, recommended minimum flows, and Black Lake water surface elevations. The MDNR acknowledged that the highest priority with regard to project operations is to maintain court-ordered water surface levels in Black Lake. The release of 75 cfs minimum flows, between inflows of 75 and 245 cfs, along with the potential to operate the project in a run-of-river mode as often as possible, are both contingent on first ensuring Black Lake is

within seasonal court-ordered limits. The MDNR clarified that at inflows of less than 75 cfs, the applicant could use the low flow turbine to maintain unspecified minimum flows downstream of the project. Based on the MDNR's clarification, staff concludes that the operational scenario recommended for the Alervno Project is not inconsistent with the FPA.

The BRLP notes that the three year test period required by the WQC, for determining operational compliance with 401 WQC conditions and measures, and further ongoing consultation with resource agencies that would occur during that period, could be used to determine the practicality of minimum flow recommendations. Commission staff had objected to the recommendation of the MDNR for a minimum flow of 75 cfs to be provided when inflows were between 75 and 245 cfs, recommending that a lower minimum flow of 25 cfs would be sufficient to support fish and aquatic resources downstream of the project. In support of their recommendation, the MDNR notes that the goal for project operations at the Alverno Project is to operate the project in a run-of-river mode as often as possible within the constraints of maintaining Black Lake water surface elevations within the court-ordered levels. Commission staff acknowledges that a minimum flow of 75 cfs between inflows of 75 and 245 cfs is a condition of the 401 WQC and agrees that the practicality of this recommendation would be determined during its implementation during the three year test period.

Commission staff was unable to resolve inconsistencies related to three of Interior's recommendations regarding run-of-river operations and associated compliance monitoring of run-of-river operations. Our preliminary determination that Interiors' recommendations to operate the project in a instantaneous run-of-river mode, install flow gaging stations to track compliance with run-of-river operations, and maintain a flow-based run-of-river compliance standard, are inconsistent with applicable sections of the FPA remains unresolved. As discussed in section V.b.2, staff determined that an instantaneous run-of-river mode at the Alverno Project would cause a significant loss of fish and aquatic resources habitat in Black Lake. Operation of the Alverno Project in an instantaneous run-of-river mode is also inconsistent with the 401 WQC issued by the MDEQ.

Table 6 presents a summary of the MDNR’s and Interior’s recommendations and our preliminary determination of whether they are within the scope of Section 10(j), and whether or not we would recommend adopting the measures under the proposed action with additional staff-recommended measures.

Table 6. Analysis of fish and wildlife agency recommendations for the Alverno Project (Source: the staff).

Recommendation	Agency	Within Scope of Section 10(j)?	Annual cost	Recommend Adopting?
1. Maintain Alverno impoundment such that court ordered lake levels for Black Lake are maintained at all times	MDNR	Yes	$0	Yes
2. Operate the project in a run-of-river mode when possible after maintaining court-ordered Black Lake levels	MDNR	Yes	$0	Yes
3. Operate the project in an instantaneous run-of-river mode, with no hydro-peaking	Interior	Yes	$0	No, instantaneous run-of-river mode at all times would cause Black Lake to range outside of court-ordered limits and have negative effects on fish and aquatic resources
4. Provide a minimum flow of 75 cfs between flows of 75 and 245 cfs	MDNR	Yes	$0	Yes, as resolved at 10(j) negotiations
5. Limit Black Lake level fluctuations to $\pm$ 0.25	Interior	Yes	$0	Yes
6. Develop and implement an operational gaging and compliance plan	MDNR Interior	Yes	$2,060	Yes

Recommendation	Agency	Within Scope of Section 10(j)?	Annual cost	Recommend Adopting?
7. Maintain a record of headwater elevations of Alverno impoundment and Black Lake, recorded hourly	MDNR	Yes	$0	Yes
8. Install staff gages on the upstream wall of the dam in a clearly visible location	MDNR Interior	Yes	$550	Yes
9. Install telemetered, continuous water level automated recording devices on the project's reservoir and tailwater	Interior	Yes	$2,600	No, we find a tailwater elevation sensor to be unnecessary.
10. Maintain daily record of operations, including turbine operations, headwater and tailwater elevations, and hourly flow releases through the powerhouse and spillway, and provide this information to the agencies upon request	Interior	Yes	Nominal	Yes
11. Post interpretive signs near flow gages and respective reservoir boat launch sites that describe the operation of the reservoirs	MDNR	No, not a specific measure for fish and wildlife	$150	No, signs could lead to vandalism and destruction of monitoring equipment

Recommendation	Agency	Within Scope of Section 10(j)?	Annual cost	Recommend Adopting?
12. Prepare a report to the Commission documenting 3 years of compliance with recommended operating standards	MDNR	Yes	$425	Yes
13. Construct, maintain, and fund USGS flow gaging stations or comparable equipment, upstream and downstream of dam to measure inflow and discharge	Interior	Yes	$10,500	No, compliance with recommended operating regime will be determined using elevation data from Black Lake and water surface elevations in Alverno impoundment
14. Maintain compliance with run-of-river by having no more than 10 percent difference in discharge upstream and downstream of project	Interior	Yes	$0	No, we do not recommend run-of-river because of adverse effects on fish habitat in Black Lake; also we do not recommend flow-based operational compliance monitoring
15. Pass river inflow within a few minutes through the project in the event of a shutdown	Interior	Yes	Nominal	Yes

Recommendation	Agency	Within Scope of Section 10(j)?	Annual cost	Recommend Adopting?
16. Prepare a plan to coordinate with the MDNR and FWS on all emergency and maintenance drawdowns	Interior	No, not a specific fish and wildlife measure	$160	Yes, under Section 10(a)
17. Maintain DO concentrations in the project tailwater not less than 5 mg/l at any time	MDNR Interior	Yes	$0	Yes
18. Maintain water temperature downstream of the project less than temperatures specified	MDNR Interior	Yes	$0	Yes
19. Do not warm Black River downstream of Alverno dam more than 5 ^{o}F greater than temperatures as measured upstream of the Alverno impoundment	MDNR	Yes	$0	Yes
20. Develop and implement a water quality monitoring plan, including water temperature and DO monitoring	MDNR Interior	Yes	$7,600	Yes
21. Pay liquidated damages to the State of Michigan for each violation of water quality standards	MDNR	No, not a specific fish and wildlife measure	Undeter-mined	No, outside Commissions purview to require payment of damages

Recommendation	Agency	Within Scope of Section 10(j)?	Annual cost	Recommend Adopting?
22. Include a standard re-opener for fish passage	MDNR Interior	No, not a specific fish and wildlife measure	$0	No, standard L-form license article provides similar provisions
23. Develop and implement a downstream fish passage protection plan	MDNR	No, not a specific fish and wildlife measure	Nominal	No, no evidence entrainment adversely affects fish populations
24. Design and evaluate all potential protective devices; install fish protection devices at the project; develop operation and maintenance procedures for selected device; and conduct study to determine effectiveness of installed fish protection devices	MDNR	No, not a specific fish and wildlife measure	$130,000	No, no evidence entrainment mortality adversely affects fish populations
25. Develop a Fish Protection Fund (FPF) to escrow an initial and/or annual payment to finance appropriate fish protection measures	MDNR Interior	No, not a specific fish and wildlife measure	Undeter-mined	No, no evidence entrainment mortality adversely affects fish populations

Recommendation	Agency	Within Scope of Section 10(j)?	Annual cost	Recommend Adopting?
26. Conduct a fisheries damage assessment and pay (compensate) Michigan an annual restitution value	MDNR Interior	No, not a specific fish and wildlife measure	Undeter-mined	No, outside of Commission's regulatory authority to require payment of damages for fish losses
27. Develop and implement a plan to pass natural organic debris collected on trash racks and log booms over the Alverno dam to improve fish habitat	MDNR	Yes	$530	Yes
28. Prepare a plan for studying costs of: (1) permanent non-power operation; (2) partial project removal; or (3) complete project removal of the Alverno Project	MDNR	No, not a specific fish and wildlife measure	Undeter-mined	No,
29. Purple Loosestrife and Eurasian Watermilfoil Control	Interior MDNR	Yes	Minimal	Yes

Recommendation	Agency	Within Scope of Section 10(j)?	Annual cost	Recommend Adopting?
30. Wildlife Management Plan including provisions for; wood duck boxes, mallard hen house, purple martin houses, osprey nest platforms, bat house, bluebird nest boxes, protect and enhance habitat, protect sensitive areas and riparian buffer strip, vegetation management, and consultation with agencies.	Interior MDRN	Yes	$512	Yes
31. Shoreline Erosion Control Plan	Interior MDNR	Yes	Minimal	No, we recommend that the licensee control erosion at the project impoundment
32. Operate existing recreation facilities; tailwater fishing site, impoundment fishing site/pier, impoundment boat launch, boat launch downstream of dam, canoe portage and signs	MDNR	No, not a specific fish and wildlife measure	Undeter-mined	Yes, under Section 10(a)

Recommendation	Agency	Within Scope of Section 10(j)?	Annual cost	Recommend Adopting?
33. Provide for construction, maintenance, and operation of such reasonable facilities and modifications to project structures and operation as part of fish and wildlife reopener license article	MDNR	No, not a specific fish and wildlife measure	Undeter-mined	No, standard L-form license article provides similar provisions
34. Comprehensive Land Management Plan	MDNR	No, not a specific fish and wildlife measure	Nominal	No, commitment to protect lands and wildlife plan meets needs for protection

Recommendations Outside the Scope of Section 10(j)

As identified in Table 6 we determined that 12 of the 34 recommendations made by MDNR or Interior are outside the scope of Section 10(j) because they are not specific measures to protect fish and wildlife. We considered, and recommended adopting, two of these recommendations under the public interest standard of Section 10(a) of the FPA.

We do not recommend adopting the MDNR's recommendation for the BRLP to prepare a plan for studying the cost of: (1) permanent non-power operation; (2) partial project removal; or (3) complete project removal of the Alverno Project. Because there is no evidence that the Alverno Project is in poor physical condition or has marginal economics such that the project would not remain viable throughout the term of the license, there is no reason to require the BRLP to fund the cost of studying project retirement. The Commission has also stated that it will not generically impose retirement funding requirements on licensees.[36] However, the licensee would be ultimately responsible for meeting a reasonable level of retirement costs when the project is retired.

[36]FERC Statutes and Regulations ¶ 31,011 (1994).

IX. CONSISTENCY WITH COMPREHENSIVE PLANS

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

Accordingly, federal and state agencies filed 55 plans with the Commission that address various resources in Michigan. Only one plan is relevant to this project.[37] No conflicts were found.

X. FINDING OF NO SIGNIFICANT IMPACT

We've prepared this EA for the Alverno project pursuant to the National Environmental Policy Act of 1969.

If the Alverno Project is licensed as proposed with the additional staff-recommended measures, the project would continue to operate while providing enhancements to fish and wildlife resources, improvements to recreation facilities, and protection of cultural resources in the project area.

Based on our independent analysis, issuing a license for the project, as proposed with the additional staff-recommended measures, would not constitute a major federal action significantly affecting the quality of the human environment.

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APPENDIX A

Comments and Commission Staff Responses on the Alverno Hydroelectric Project Draft Environmental Assessment

The Michigan Department of Natural Resources (MDNR), Michigan Department of Environmental Quality (MDEQ), and the Black River Limited Partnership (BRLP) commented on the Draft Environmental Assessment (EA) by letters dated November 16, November 16, 2000, and January 23, 2001, respectively. Specific comments on the EA are summarized into the 18 general comment areas below. Each general comment is followed by our response, including any changes made to the EA. Typographical changes or minor clarification to the EA are not summarized, but have been incorporated into the EA. Copies of the comment letters can be viewed on the web at www.ferc.fed.us/online/rims.htm. Call (202) 208-2222 for assistance.

Comment-1: The MDNR notes that the EA appears to contradict itself by not accepting provision included in the water quality certification (WQC). The Commission staff indicates its disagreement with the WQC provision to provide flows of 75 cfs during periods when flows to the project are between 75 and 245 cfs. The MDEQ insists provisions of the WQC be included in any license issued for the Alverno Project.

Response-1: In Sections V.C of the EA, staff completes an independent analysis of the WQC to determine if conditions of the WQC are in the public interest as related to licensing the Alverno Project. Staff's does not concur with the MDEQ that all provisions of the WQC were in the public interest. Irrespective of staff's analysis, conditions of the WQC will be included in any license issued for the Alverno Project, as required by federal law.

Comment-2: The MDNR concurs with the EA's position regarding the development of a shoreline erosion control plan. The plan should include provisions to periodically monitor the impoundment and work with riparian owners on the portions of the impoundment not directly controlled by the Alverno Project.

Response-2: We agree. In Section V.C.1 of the EA staff recommends that monitoring for erosion be included in the recommended erosion and sediment control plan. Further, we recommend that the private land owners be invited to voluntarily participate in controlling erosion.

Comment-3: The MDNR concurs with the EA's position regarding the development of a recreation plan. The plan should include provisions to provide accessible fishing

opportunities for the impoundment and tailrace areas, boat launches, and restroom facilities.

Response-3: We agree that the recreation facilities should be accessible for people with disabilities and the applicant proposes to provide facilities that accessible. The specific design details, such as; location, materials, etc., of the facilities will be determined, in consultation with the agencies, as part of the proposed recreation plan. The applicant is responsible for constructing facilities that are consistent with the Americans with Disabilities Act.

Comment-4: The MDNR concurs with the EA's position regarding flow gaging. The downstream gage should monitor river flows to encompass project flows and spill; operational records should provide information regarding project flows; all automated gages should be telemetered.

Response-4: The WQC allows the licensee to, potentially, use gaging of project operations data in lieu of downstream gaging. As discussed in Section V.C of the EA, staff maintain that downstream gaging at the Alverno Project is unlikely to be effective because the Alverno Project tailrace is the backwater area for the Cheboygan dam. Staff recommended including the downstream gage in the operations and compliance monitoring plan, because it is a requirement of the WQC.

Comment-5: The MDNR agrees that the Alverno Project implement and monitor water quality parameters after five years and every five years thereafter. The MDNR, however, disagrees with the EA's position that BRLP need not monitor chemical constituents of the impoundment sediments ten years after license issuance and every ten years thereafter. MDEQ commented that since contaminant monitoring is a condition of the WQC, the Commission is obligated to include this provision in any license issued for the Alverno Project.

Response-5: As discussed in Section V.C. of the EA, staff maintain that sediment contaminant monitoring, as required by the WQC, is not necessary, because although the Alverno Project may influence patterns of sedimentation, the operation and maintenance of the project has no link to any contaminants found in Black River sediments. Staff recognize, however, that because sediment contaminant monitoring is a condition of the WQC, it will be included in any license issued for the Alverno Project.

Comment-6: The MDNR concurs that any license issued for the Alverno Project require a reservoir drawdown management plan, to minimize negative aspects of drawdowns necessary for operation and maintenance of the Alverno Project.

Response-6: No response required.

Comment-7: The MDNR concurs with the recommendation to require cooperation with agencies and other entities regarding lake sturgeon management efforts. It is imperative that any license issued for the Alverno Project include provisions to cooperate with agency (and others) efforts to enhance lake sturgeon.

Response-7: No response required.

Comment-8: The MDNR and MDEQ recommend passing large woody debris that accumulates on log booms or spillways.

Response-8: We agree. See Section V.C. recommending that any license issued require downstream movement of woody debris accumulating on the project spillway and log boom, as appropriate.

Comment-9: The MDNR concurs that a wildlife management plan be developed in consultation with the agencies and others.

Response-9: No response required.

Comment-10: The MDNR says that a land management plan (LMP) is essential to protect potential habitat for wildlife species, since most of the land surrounding the impoundment and areas downstream of the project will not be protected from future development. The MDNR requests that any license issued for the Alverno Project include provision for developing a LMP in consultation with the agencies (and others).

Response-10: Staff does not recommend a LMP because BRLP has very little land necessitating the need for a specific management plan. In addition, the recommended shoreline management plan and wildlife management plan will address the resource concerns raised by MDNR.

Comment-11: The MDNR agrees to deferring fish passage at this time, but considers a re-opener for fish passage in the future to be necessary.

Response-11: In Section III.C of the EA, staff conclude that the uncertainty of providing upstream passage for lake sturgeon at the Alverno Project, at present, outweigh the potential benefits. This conclusion was based in part on the MDNR's guidance that lake sturgeon restoration efforts consider population genetics and uniqueness of lake sturgeon populations, both of which are currently unknown for the Black Lake population.

Standard fish and wildlife re-openers included in any license issued can be used to address any potential future fish passage needs at the Alverno Project.

Comment-12: The MDNR disagrees with the assertion that the Alverno Dam has maintained the status of the fisheries communities in Black Lake by virtue of blocking fish movement upstream.

Response-12: As discussed in section V.C. of the EA, staff maintain that Alverno dam, acting as a functional barrier to upstream fish passage from Lake Huron, has helped maintain the high quality status of the Black Lake fishery. We acknowledge that the invasion of exotic noxious species can occur absent fish passage at Alverno Dam, as we indicate in the EA.

Comment-13: The EA concludes that downstream fish protection devices are not necessary at the Alverno Project based on the fact that no data exists showing entrainment adversely affects Black River/Black Lake fish populations. Further, fish surveys show the lake and impoundment support diverse, naturally reproducing populations. Nevertheless, the MDNR continues to recommend that permanent downstream protection be installed to protect all fish species throughout the entire year.

Response-13: Our analysis and conclusions regarding downstream fish protection remain unchanged. Although, we acknowledge that some fishes must certainly be lost to entrainment mortality, there is no evidence showing that entrainment mortality is adversely affecting fish populations in the Black River (see Section V.C of the EA). Conversely, the diversity of fish species present in the project area, along with the fact that they are naturally reproducing, indicates a normal functioning fish community in the Black Lake/Black River area.

Comment-14: The MDNR notes that out-migration of lake sturgeon has been identified as a potential problem. Fish which pass downstream of the Alervno Project through the turbines or by other means are killed or entrained or are isolated from Black Lake and unable to return to their natural spawning grounds.

Response-14: In Section V.C. of the EA, we conclude that downstream passage protection for lake sturgeon was not warranted. Among other reasons, the low population size of sturgeon in Black Lake would likely cause the lake to function as a sink for recruitment rather than a source. In the EA we state the following: "We recognize that existing and future management efforts may enhance the sturgeon population in Black Lake and increase the chance for downstream movements and turbine mortality of juvenile sturgeon at the Alverno Project. If in the future, high rates of entrainment and

mortality of juvenile sturgeon are identified, we recommend the licensee consult and cooperate with the resource agencies to enhance downstream passage and minimize turbine entrainment." We believe our recommendation provides sufficient latitude for downstream passage management for sturgeon, should sturgeon entrainment be identified as a limiting factor in the future.

Comment-15: The MDNR disagrees that the payment of compensation and restitution for entrainment losses is not addressed by the federal licensing authority of the Commission. Because the terms of a license issued by the Commission enable the project to kill fish, either the licensee, due to the operation of the hydroelectric project or the Commission, through licensing, should be responsible for compensating the State of Michigan for taking its Public Trust Resources.

Response-15: As indicated in the EA, a requirement for the licensee to pay to the State of Michigan the replacement costs or restitution value for fish lost at the Alverno Project is beyond the Commission's purview. Our conclusion regarding payments for fish lost at the project remains unchanged.

Comment-16: The MDNR disagrees with the conclusion regarding retirement of the Alverno Project and supports the position that the licensee post a cash bond or establish a payment schedule for meeting the cash bond requirements for the amount deemed necessary from a dam retirement study.

Response-16: Your position is noted. As discussed in Section VIII, while we conclude that retirement funding is not necessary, the licensee would ultimately be responsible for meeting a reasonable level of of retirement costs when the project is retired.

Comment-17: The BRLP notes that staff has mis-characterized the effects of a potential project shutdown on downstream resources. It is impossible to dewater the Alverno tailrace, and we question the need for including staff's statement on page 53, item 8 in the draft EA: "develop and implement provisions to prevent the dewatering of downstream reaches in the event of a project shutdown."

Response-17: See Section V.C. We have changed the wording in our recommendation to the following regarding project shutdowns: "develop and implement provisions to immediately provide flow to downstream reaches in the event of a project shutdown."

Comment-18: The BRLP request that conditions of the WQC, which include a three-year test period and development of a monitoring plan, be used to cover flow-monitoring

requirements in a license for the Alervno Project. Consultation with the resource agencies to develop a flow monitoring plan could preclude the need for downstream gaging.

Response-18: In Section V.C. of the EA, we discuss the need for a downstream gage. We have also added language indicating that a downstream gage may have limited accuracy because the Alverno tailgate is the backwater area from the downstream dam. Additionally, we note that the MDEQ's WQC condition for the licensee to engage in a three-year test period for operational compliance, in consultation with the resource agencies, would enable the full evaluation of the need for downstream gaging. We recommend the need for downstream gaging be assessed during the test period, and considered as an option if deemed necessary after or during the test period.

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