

Before Commissioners: Pat Wood, III, Chairman;
William L. Massey, Linda Breathitt,
and Nora Mead Brownell.

Hydro Development Group, Inc. Project No.6058-005

ORDER ISSUING SUBSEQUENT LICENSE
Minor Project

(Issued October 30, 2002)

INTRODUCTION

1. On January 2, 2001, Hydro Development Group, Inc., (HDG) filed an application for a new license pursuant to Section 4(e) and 10(a)(1) of the Federal Power Act (FPA)[1] to continue to operate and maintain the existing 1,490-kilowatt (kW) Hailesboro #4 Project.[2] The project is located on the Oswegatchie River, a navigable waterway of the United States,[3] in St. Lawrence County, near the village of Gouverneur, New York.[4] HDG proposes no new capacity and no new construction. This order issues a subsequent license for the project.

BACKGROUND

2. Notice of the application was published on January 17, 2001. Scoping and a site visit were conducted October 11, 2001. Scoping Documents 1 and 2 were issued September 7, 2001 and February 7, 2002, respectively. The Commission issued a notice on July 23, 2001 requesting motions to intervene. The U.S. Department of the Interior (Interior), and the New York State Department of Conservation (NYSDEC) filed timely motions to intervene. In addition, New York Rivers United, American Rivers, American Whitewater and Natural Heritage Institute filed untimely motions to intervene on September 24, 2001, November 5, 2001, and January 2, 2002, which were granted by notice issued on March 13, 2002. None of the interventions were in opposition.

3. On January 31, 2002, the Commission issued a notice that the project was ready for environmental analysis, and requested final terms and conditions. Interior, NYSDEC, and the Natural Heritage Institute responded, providing comments, terms and conditions. The motions to intervene and comments received from interested agencies and individuals have been fully considered in determining whether and under what conditions to issue this license.

4. A multi-project environmental assessment (EA) for the HDG's Hailesboro #4 Project and Fowler #7 Project was issued on June 28, 2002. Comments on this EA were addressed in a Final EA, at Appendix B of this order.[5]

PROJECT DESCRIPTION

5. The Hailesboro #4 Project consists of one 5-foot-high by 58-foot-long concrete gravity dam with 2-foot-high wooden flashboards and a dam crest elevation of 459 feet National Geodetic Vertical Datum (NGVD); a second 14-foot-high by 92-foot-long concrete gravity dam with a 2-foot-high pneumatic crest gate and effective dam crest elevation of 459.02 feet (NGVD); a 2-acre reservoir at the normal pool elevation of 461 feet (NGVD); a powerhouse containing two turbine/generating units having a total rated capacity of 1,490 kW; an intake structure with steel trashracks; one 23-kV transmission line about 50 feet long; and appurtenant facilities. In addition, this order incorporates the Island Branch diversion dam as part of the Hailesboro #4 Project. A more detailed project description is contained in ordering paragraph (B)(2).

6. The project provides average annual generation of 10,600,000 kilowatt-hours (KWh) when operated in run-of-river mode. The project has been operated in a run-of-river mode since 1983, and HDG proposes to continue to do so.

APPLICANT'S PLANS AND CAPABILITIES

7. In accordance with Sections 10 and 15 of the FPA,[6] we have evaluated HDG's record as a licensee with respect to the following: (1) compliance history and ability to comply with the subsequent license; and (2) safe management, operation, and maintenance of the project. [7]

A. Compliance History and Ability to Comply with the Subsequent License (Section 15(a)(2)(A))

8. We have reviewed HDG's record of compliance with the terms and conditions of the existing license. We find that HDG's overall record of making timely filings and overall compliance with its license is satisfactory. Therefore, we believe that HDG can satisfy the conditions of a subsequent license.

B. Safe Management, Operation, and Maintenance the Project (Section 15(a)(2)(B))

9. HDG staff responsible for maintenance and operation of the Hailesboro #4 Project are stationed at the nearby township of Fowler. Operations and maintenance personnel are sent regularly to perform maintenance and inspection duties. The project would pose no threat to public safety if operated according to the

regulations governing our hydroelectric licenses. We have reviewed HDG's record of management, operation, and maintenance of the project and conclude that the dams and other project works are safe and that the licensee's record of managing, operating, and maintaining these facilities supports the decision to issue a subsequent license.

WATER QUALITY CERTIFICATION

10. Under Section 401(a)(1) of the Clean Water Act (CWA),[8] the Commission may not issue a license for a hydroelectric project unless the state water quality certifying agency either has issued a water quality certification for the project or has waived certification by failing to act on a request for certification within a reasonable period of time, not to exceed one year. Section 401(d) of the CWA provides that the State certification shall become a condition on any Federal license or permit that is issued.[9]

11. On January 3, 2001, HDG applied to the NYSDEC for a water quality certification for the Hailesboro #4 Project. NYSDEC issued a certification for the project on December 21, 2001, subject to certain 17 conditions, stated in Appendix A of this order. These conditions are conditions of this license.

COASTAL ZONE MANAGEMENT PROGRAM

12. Under Section 307(c)(3)(A) of the Coastal Zone Management Act (CZMA),[10] the Commission cannot issue a license for a project within or affecting a state's coastal zone, unless the state CZMA agency concurs with the license applicant's certification of consistency with the state's Coastal Zone Management program. The project is located outside of New York's coastal zone, and New York has not described a geographic location, as provided by 15 C.F.R. * 930.53(a), for federal license activities outside the coastal zone that it would wish to review. New York has not notified the Commission or the applicant that it wishes to review the applications, as provided in 15 C.F.R. * * 930.53(a)(2) and 930.54 for activities located outside a coastal zone where the state has not described a geographical location for review. Therefore, certification under Section 307(C)(3)(A) of the Coastal Zone Management Act is not required.

SECTION 18 OF THE FEDERAL POWER ACT

13. Section 18 of the FPA provides that the Commission shall require a licensee to construct, operate, and maintain such fishways as may be prescribed by the Secretary of the Interior or the Secretary of Commerce, as appropriate.[11] By letter dated March 29, 2002, the Secretary of the Interior requested that a reservation of authority to prescribe the construction, operation, and maintenance of appropriate upstream and downstream fishways be included in any license issued for the Hailesboro #4

Project.

14. The Commission recognizes that future fish passage needs and management objectives cannot always be determined at the time of project licensing. In such cases, the Commission's practice has been to include a license article, when requested, that reserves the Secretary of the Interior's authority, as appropriate, to prescribe fishways.[12] Therefore, Article 408 reserves Interior's authority to prescribe fishways.

RECOMMENDATIONS OF FEDERAL AND STATE FISH AND WILDLIFE AGENCIES UNDER FPA SECTION 10(j)

15. Section 10(j)(1) of the FPA[13] requires the Commission, when issuing a license, to include license conditions based on the recommendations of the federal and state fish and wildlife agencies, submitted pursuant to the Fish and Wildlife Coordination Act,[14] 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 recommendation may be inconsistent with the purposes and requirements of Part I of the FPA or other applicable law, Section 10(j)(2) requires the Commission and the agencies to attempt to resolve any such inconsistency, giving due weight to the recommendations, expertise, and statutory responsibilities of such agencies

16. By letter dated March 29, 2002, the NYSDEC indicated they concur with all the recommendations in the draft EA for the project. By letter dated March 29, 2002, Interior submitted ten Section 10(j) recommendations for the project. One recommendation was not within the scope of Section 10(j).[15] Of the nine recommendations that fell within the scope of Section 10(j), recommendations in the draft EA were consistent with seven. A preliminary determination was made in the draft EA that the following two recommendations may be inconsistent with purposes and requirements of the FPA: (1) maintain the impoundment at the top of the flashboards (or dam crest when the flashboards are off) to ensure spillage will instantaneously occur should the units go offline for any reason, and (2) as a condition of the project's license, require a 25 cfs minimum flow at Island Branch weir, a small diversion dam which is not part of the existing project.

17. On August 12, 2002, Commission staff held a 10(j) meeting Interior's Fish and Wildlife Service (FWS) to resolve these issues. Both issues were resolved and conditions have been included in the license, as appropriate. With respect to maintaining the impoundment at the top of the flashboards, we determined this recommendation could not be practically implemented without major modifications of the crest of the dams. Interior accepted our recommendation to maintain the impoundment within 3 inches of the dam crest. With respect to requiring a 25 cfs minimum flow at Island Branch weir, Interior accepted our

proposal to include the Island Branch weir as part of the project facilities for the Hailesboro #4 Project, and require a 30 cfs minimum flow from the Island Branch weir as a condition of license. A minimum flow of 30 cfs, as currently released from the weir, would satisfy Interior's recommendation for a 25 cfs minimum flow.[16]

18. This order contains conditions which are consistent with all the recommendations provided by federal and state fish and wildlife agencies.

ENDANGERED SPECIES ACT

19. Section 7(a)(2) of the Endangered Species Act of 1973[17] requires federal agencies to ensure that their actions are not likely to jeopardize the continued existence of federally-listed threatened and endangered species, or result in the destruction or adverse modification of their critical habitat.

20. By letter dated April 5, 2002, Interior stated that, except for occasional transient individuals, no federally listed or proposed endangered or threatened species under their jurisdiction are known to exist in the projects' impact areas. In addition, no habitat in the projects' impact area is currently designated or proposed "critical habitat."

21. The bald eagle (*Haliaeetus leucocephalus*), a federally listed threatened species, and osprey (*Pandion haliaetus*) use the Oswegatchie River corridor during migration and can be expected to occur as transients at these times (letter from D. Stilwell, Acting Supervisor, FWS, Cortland, NY, to the Commission, dated April 5, 2002). We conclude that project operation, with our required measures, will not likely adversely affect the bald eagle or osprey or their habitats.

COMPREHENSIVE PLANS

22. Section 10(a)(2)(A) of the FPA[18] 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.[19] Of the 29 comprehensive plans filed with the Commission, 6 plans relevant to the Hailesboro #4 Project were identified and reviewed.[20] No inconsistencies were found.

HISTORIC PROPERTIES

23. There are no known properties included in or eligible for inclusion in the National Register of Historic Places (National Register) within the project's area of potential effect (APE).

The SHPO reviewed the proposed action and determined that the relicensing of this minor project would have no effect on the cultural resources in or eligible for listing in the National Register (letter to K. Webb, CHI, Andover, MA, from R. Pierpont, Director, Historic Preservation Field Services Bureau, Waterford, NY, dated August 28, 2001). In the event any archeological or historic sites are found during project maintenance and operation, Article 411 requires the licensee to consult with the SHPO and prepare a cultural resources management plan.

OTHER ISSUES

24. There are 11 hydropower projects (17 developments) along a 132-mile length of the mainstem of the Oswegatchie River. Eight are licensed projects, and three have been issued exemptions from license. There are six facilities within a 5-mile river segment of the proposed projects, all operated by HDG. Figure 1 of the EA shows the location of project facilities in relation to exempt Hailesboro #6. From upstream to downstream, these include:

- (1) the 3,481 kW Emeryville Project, P-2850, licensed 6/17/1982, expires 5/31/2012;
- (2) the 900 kW Fowler #7 Project, P-6059, licensed 11/29/1982, expires 10/31/2002;
- (3) the Island Branch diversion dam, an unlicensed dam constructed at the mouth of the Island Branch in 1985;
- (4) the 1,000 kW Hailesboro Mill #6 Project, P-3181, exempted 9/17/1981;
- (5) the 1,490 kW Hailesboro #4 Project, P-6058, licensed 1/10/1993, expires 12/31/2002; and
- (6) the 1,000 kW Hailesboro #3 Project, P-5633, exempted 7/14/1982.

Island Branch Diversion Dam

25. Interior makes one recommendation for the Hailesboro #4 Project that pertains to the operation of a structure not currently part of any licensed project. Interior recommends that we require a 30 cfs flow through a fixed weir at the Island Branch diversion dam. HDG proposes to continue to provide a 30 cfs minimum flow at the diversion dam, passed through a fixed weir in the dam. Interior's recommendation is intended to ensure that an enforceable flow at the diversion dam becomes a condition in any license issued for the Hailesboro #4 Project.

26. The final EA, at Appendix B of this order, supports 30 cfs as the desired flow in the Island Branch bypass to benefit fish and wildlife resources in this reach. A 30 cfs minimum flow is acceptable to Interior, as it exceeds Interior's flow recommendation of 25 cfs. Interior (letter dated August 27, 2002) and the HDG (letter dated July 29, 2002) support the inclusion of Island Branch diversion dam in the license for Hailesboro #4, and a 30 cfs minimum flow through the fixed Island Branch weir. We are aware of no opposition to that condition. Because we conclude that it is in the public interest to include the Island Branch diversion dam and weir as part of the Hailesboro #4 Project for the benefit of fish and wildlife resources, we will incorporate it as a condition of the license.

Re-opener Condition for Exempted Project

27. New York Rivers United, et al., asserts, that the Commission has the authority to reopen the exemption from licensing held by HDG for Hailesboro #6 (Project No. 3181), [21] to mitigate the cumulative impacts of HDG's Hailesboro #4, Fowler #7, as well as exempted projects, Hailesboro #6 and Hailesboro #3. New York Rivers United, et al., specifically relies on Standard Exemption Article 6[22] and regulations applicable to reserved authority in licensing/relicensing proceedings.[23]

28. In this case, the regulations applicable to reserved authority in licensing/relicensing proceedings, relied on by New York Rivers United, et al., do not apply to exempt facilities, which by definition are not licensed. Moreover, Standard Exemption Article 6 was not part of our regulations in effect in 1981 when the Commission issued its order exempting Hailesboro #6 and thus is not a condition of the exemption.[24] The Commission is without authority to unilaterally amend a final and non-reviewable exemption without the consent of the exemption holder.[25] Therefore, we can not amend the Hailesboro #6 exemption as requested.

COMPREHENSIVE DEVELOPMENT

29. Sections 4(e) and 10(a)(1) of the FPA,[26] respectively, require the Commission to give equal consideration to the power development purposes and to the purposes of energy conservation, the protection, mitigation of damage to, and enhancement of fish and wildlife, the protection of recreational opportunities, and the preservation of other aspects of environmental quality. Any license issued shall be such as in the Commission's judgment will be best adapted to a comprehensive plan for improving or developing a waterway or waterways for all beneficial public uses. The decision to license this project, and the terms and conditions included herein, reflect such consideration.

30. In determining whether a proposed project will be in the public interest, the Commission considers the economic benefits of project power. As was articulated in Mead Corp.,[27] 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 analysis is to provide general estimates of the potential power benefits and costs of a project, and reasonable alternatives to project power. The final EA addresses the project power benefits both with the applicant's proposed mitigation and enhancement measures and with the Commission's modifications and additions to the applicant's proposal.

31. The Hailesboro #4 Project, as licensed by the Commission, would produce a total average of 10,243,000 kWh of energy annually at an annual cost of \$544,770, or 53.18 mills per kilowatt-hour (mills/kWh). The current annual value of the project's power would be \$547,620 (53.46 mills/kWh). We base this value on the most likely alternative power source for this project, which in this case is replacing the project's power with combined-cycle gas turbines. To determine whether the proposed project is currently economically beneficial, we subtract the project's cost from the value of the power it produces. Based on current costs, the project over a 30-year license term, would have an annual net economic benefit of \$2,850 or 0.28 mills/kWh.

LICENSE TERM

32. Section 15(e) of the FPA[28] of the FPA specifies that any new license issued shall be for a term that we determine to be in the public interest, but the term may not be less than 30 years or more than 50 years. We apply this provision to subsequent licenses as well.[29] We issue a 30-year license for projects with little or no redevelopment, new construction, new capacity, 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.

33. This license authorizes a relatively modest amount of new environmental mitigation measures and no new construction or capacity. Consequently, a 30-year term of license for the Hailesboro #4 Project is appropriate.

SUMMARY OF FINDINGS

34. The final EA contains background information, analysis of effects, support for related license articles, and the basis for a finding that the project will not result in any major long-term adverse environmental impacts.

35. The design of this project is consistent with the engineering standards governing dam safety. The project would be safe if operated and maintained in accordance with the requirements of this license.

36. Based on our review and evaluation of the project, we conclude that the continued operation and maintenance of the project in the manner required by the license, will protect and enhance fish and wildlife resources, water quality, recreational, aesthetic, and cultural resources. Issuance of a new license would provide a beneficial, dependable, and inexpensive source of electric energy. The electricity generated from this renewable water power resource will be beneficial because it will continue to offset the use of fossil-fueled, steam-electric generating plants, thereby conserving nonrenewable resources and reducing atmospheric pollution. We conclude that the Hailesboro #4 Project, with the conditions and other special license articles set forth below, will be best adapted to the comprehensive development of the Oswegatchie River for beneficial public uses.

The Commission orders:

(A) This license is issued to Hydro Development Group, Inc. (licensee), for a period of 30 years, effective on January 1, 2003, to operate and maintain the Hailesboro #4 Project as conditioned in this license. This license is subject to the terms and conditions of the Federal Power Act, 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 land, to the extent of the licensee's interests in those lands, shown by exhibit G filed on January 2, 2001:

Exhibit G FERC Drawing No. 6058. Showing
Sheets 1 0001 Hailesboro #4 Project

(2) a concrete gravity-type dam comprising: (I) the 92-foot-long, 14-foot-high dam #1 surmounted by a 2-foot-high pneumatic crest gate; and (ii) the 58-foot-long, 5-foot-high dam #2 surmounted by 2-foot-high wooden flashboards;

(3) a reservoir with a 2-acre surface area and a gross storage volume of 20 acre-feet at normal water surface elevation 461 feet National Geodetic Vertical Datum (NGVD);

(4) a gated intake structure with steel trashracks which have a 1.75-inch clear spacing;

(5) a 170-foot-long concrete-lined forebay canal with a sluice gate;

(6) a reinforced concrete and concrete masonry powerhouse containing two horizontally mounted, double runner, Francis-type generating units; one 640-kW generating unit and one 850-kW generating unit for a total installed capacity of 1,490 kW, and

average annual generation of 10,600,000 kWh;

(7) a 2.4/23-kilovolt (kV) substation, and a 50-foot-long, 23-kV transmission line;

(8) appurtenant facilities; and

(9) a 73-foot-long by 3-foot-high concrete gravity diversion dam, topped with 1-foot-high wooden flashboards, located at the entrance of the Island Branch of the Oswegatchie River, notched to provide a 30 cfs minimum flow into the bypassed reach;

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 section of exhibit A filed on January 2, 2001:

Pages A-1 through A-3 describing the existing and proposed mechanical, electrical, and transmission equipment within the application for license.

Exhibit F: The following exhibit F filed on January 2, 2001:

Exhibit F Drawing FERC Drawing No 6058. Description

Sheet 1 of 3	0002	Hailesboro #4 General Layout
Sheet 2 of 3	0003	Hailesboro #4 Powerhouse Sectional
Sheet 3 of 3	0004	Hailesboro #4 Powerhouse Sectional

(3) All of the structures, fixtures, equipment, or facilities used to operate or maintain the project and located in the project boundary, all portable property that may be employed in connection with the project, 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) The following sections of the Federal Power Act are waived and excluded from the license for this minor project: 4(b), except the second sentence; 4(e), insofar as it relates to approval of plans by the Chief of Engineers and the Secretary of the Army; 6, insofar as it relates to public notice and to the acceptance and expression in the license of terms and conditions of the 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 conditions submitted by the New York Department of Environmental Conservation under Section 401 of the Clean Water Act (water quality certification) as those conditions are set forth in Appendix A of this order.

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

Article 201. The licensee shall pay the United States the following annual charges as determined by the Commission, effective the first day of the month in which this license is issued for the purpose of reimbursing the United States for the cost of administration of Part I of the Federal Power Act. The authorized installed capacity for that purpose is 1,490 kilowatts. Under the regulations currently in effect, projects with authorized installed capacity of less than or equal to 1,500 kW will not be assessed an annual charge.

Article 202. Within 45 days of the date of issuance of the license, the licensee shall file an original set and two duplicate sets of aperture cards of the approved drawings. The set of originals must be reproduced on silver or gelatin 35mm microfilm. The duplicate sets are copies of the originals made on diazo-type microfilm. All microfilm must be mounted on type D (3-1/4" x 7-3/8") aperture cards.

Prior to microfilming, the FERC Drawing Number (Exhibit G, 6058-0001 and Exhibit F, 6058-0002 through 0004) shall be shown in the margin below the title block of the approved drawing. After mounting, the Commission Drawing Number must be typed on the upper right corner of each aperture card. Additionally, the Project Number, Commission Exhibit (e.g., F-1, G-1, etc.), Drawing Title, and date of this license must be typed on the upper left corner of each aperture card.

The original and one duplicate set of aperture cards must be filed with the Secretary of the Commission, ATTN: OEP. The remaining duplicate set of aperture cards shall be filed with the Commission's New York Regional Office.

Article 301. Within six months of issuance of this license, the licensee shall file, for Commission approval, revised Exhibits A, F, and G to describe and show the Island Branch weir as part of the project facilities, and as-built drawings showing the completed facilities directed by any article of this license (modifications to sluice gate and recreational facilities).

Article 401. Run-of-River Operation. Upon approval of the flow monitoring plan required in Article 404, the licensee shall

operate the project in a run-of-river mode for the protection of aquatic resources in the Oswegatchie River. The licensee shall at all times act to minimize the fluctuation of the project reservoir surface elevation by maintaining a discharge from the project so that, at any point in time, flows, as measured immediately downstream of the project tailrace, approximate the sum of inflows to the project reservoir.

Run-of-river operation may be temporarily modified if required by operating emergencies beyond the control of the licensee, or for short periods of time upon mutual agreement between the licensee, New York State Department of Environmental Conservation (NYDEC), and the U.S. Fish and Wildlife Service (FWS). If the flow is so modified, the licensee shall notify the Commission, the NYDEC, and the FWS as soon as possible, but no later than 10 days after each such incident.

Article 402. Impoundment Elevation Maintenance. Upon approval of the flow monitoring plan required in Article 404, the licensee shall manage project impoundment elevation levels for the protection of water quality and aquatic resources in the Oswegatchie River. The licensee shall limit the operational elevation range in the impoundment to within 3 inches from the top of the flashboards (not below elevation 461 feet National Geodetic Vertical Datum), or within 3 inches of the permanent crest of the dam when flashboards are not in place, during normal operations. Elevation levels above the crest of the flashboards, or dam crest which ever is applicable, are spillage events and are not restricted under this article.

This operational elevation range may be temporarily modified if required by operating emergencies beyond the control of the licensee or for short periods upon mutual agreement between the licensee, the New York State Department of Environmental Conservation (NYDEC), and the U.S. Fish and Wildlife Service (FWS). If the operational elevation range is so modified, the licensee shall notify the Commission, the NYDEC, and the FWS as soon as possible, but no later than 10 days after each such incident.

Article 403. Minimum Flows. The licensee shall provide minimum flows of 20 cubic feet per second (cfs) from dam #1 via the sluice located at the downstream terminus of the trashracks, 8 cfs from dam #2 into the bypassed reach, and 30 cfs from a notch in the Island Branch Weir for the protection of fisheries resources. The minimum flows may be provided by leakage, spillage, or other means, unless otherwise noted.

During walleye spawning season, the licensee shall provide a total minimum flow of 105 cfs into the combined bypassed reaches below dam #1 and dam #2 (Middle Channel) to facilitate walleye spawning. The walleye spawning season starts when the water temperature reaches 40 C (39.20 F) for 4 consecutive days after March 15th of each year. The walleye spawning season ends 30

days after water temperature has reached 100 C (500 F). The licensee shall consult with the New York State Department of Environmental Conservation (NYDEC) and the U.S. Fish and Wildlife Service (FWS) prior to the first walleye season following license issuance to determine the exact location(s) for monitoring water temperatures. The licensee shall notify the Commission of the agreed upon water temperature monitoring location(s) and documentation and reporting procedures.

Minimum flow releases from the Hailesboro #4 dams may be temporarily modified if required by operating emergencies beyond the control of the licensee, and for short periods upon mutual agreement between the licensee, the NYDEC, and the FWS. 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, and shall provide the reason for the modified flow.

Article 404. Flow Monitoring Plan. Within 6 months of the effective date of this license, the licensee shall file for Commission approval, a flow monitoring plan to ensure compliance with run-of-river operation required by Article 401, reservoir elevation operational range limitations required by Article 402, and minimum flows required by Article 403.

The plan shall include, at a minimum: (1) a description of the criteria by which compliance with run-of-river operation would be measured; (2) the type and location of all measuring devices, including staff gages visible to the public, for the purposes of determining the stage and/or flow of the Oswegatchie River, including the Island Branch, and all other project flows including flows through the turbines and any other bypass or diversion flows; and project headpond and tailwater elevations; (3) verification of the capacity of the sluice to provide a continuous minimum flow during any shut down of units; (4) a proposed method for providing up to 105 cubic feet per second minimum flow into the bypassed reach during walleye spawning season, including the location of temperature monitoring for the purpose of determining the beginning and end of the walleye spawning season; (5) record-keeping and reporting procedures including appropriate means of independent verification of minimum flows by the New York State Department of Environmental Conservation (NYDEC), U.S. Fish and Wildlife Service (FWS) and the public; and (6) a schedule for implementation of the plan that provides for making all gaging and ancillary equipment operational and fully calibrated within one year of the effective date of this license.

The licensee shall develop the plan in consultation with NYDEC and FWS, and shall include with the plan documentation of agency 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 shall include the licensee's reasons, based on site-specific information.

The Commission reserves the right to require changes to the plan. No ground-disturbing or land-clearing activities for installation and use of monitoring devices shall begin until the licensee is notified the plan is approved. Upon Commission approval, the licensee shall implement the plan, including any changes required by the Commission.

Article 405. Planned Drawdowns. At least 30 days prior to any planned impoundment drawdown, the licensee shall file with the Commission, for approval, an impoundment drawdown plan and schedule developed in consultation with the New York State Department of Environmental Conservation (NYDEC), U.S. Fish and Wildlife Service (FWS). The licensee shall allow a minimum of 30 days for the agencies to comment and to make recommendations before filing the drawdown 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 licensee shall also include in the drawdown plan a provision to notify the public of any planned impoundment drawdown proposed by the licensee.

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, according to the approved schedule.

Article 406. Erosion and Sediment Control. At least 60 days prior to the commencement of any earth disturbing project maintenance or construction activities, the licensee shall file with the Commission and the New York State Department of Environmental Conservation (NYDEC), for approval, a site-specific erosion and sediment control plan (ESCP) to protect water quality in the Oswegatchie River. Any site-specific ESCP shall include measures consistent with the water quality certification issued by NYDEC on December 21, 2001.

Article 407. Downstream Fish Protection. Within 6 months of issuance of license, the licensee shall implement downstream fish conveyance and protection measures at the project to protect fisheries resources in the Oswegatchie River, including: (1) modification of the outflow of the sluice gate to minimize injury to any fish passing downstream via the 20 cubic feet per second minimum flow at dam #1; (2) provision of an adequate plunge pool (at least 1 foot of depth for every 4 feet of drop), a smooth surface in the bypass sluice, and adequate dispersal of flow through the sluice to provide sufficient depths for safe fish movement; and (3) consultation with the U.S. Department of the Interior and the New York State Department of Environmental Conservation regarding the need for trashracks with a maximum

clear spacing of 1 inch when the existing trashracks need replacement.

Article 408. Reservation of Authority. Authority is reserved to the Commission to require the licensee to construct, operate, and maintain, or to provide for the construction, operation, and maintenance of, such fishways as may be prescribed by the Secretary of the Interior pursuant to Section 18 of the Federal Power Act.

Article 409. Woody Debris Management Plan. Within six months of license issuance, the licensee shall file for Commission approval a plan, developed in consultation with the New York State Department of Environmental Conservation (NYDEC) and U.S. Fish and Wildlife Service (FWS), for the passage of large woody debris that collects near the project intake into the reach of river below the project dam to improve fish habitat downstream of the project dam. The plan should include a provision to keep clear, to an adequate width, lands along the shoreline, and to dispose of brush, timber, and debris along the periphery of the project reservoir, as required by standard article 15.

The licensee shall allow a minimum of 60 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 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 410. Recreation Enhancements. Within one year of license issuance, the licensee shall file, for Commission approval, a final recreational enhancement plan for the Hailesboro #4 Project. The plan should include, at a minimum, the following elements:

- (1) a car-top boat access point, located upstream of the project's two dams commensurate with safety concerns and land ownership constraints;
- (2) a put-in area and parking along the shoreline of the Oswegatchie River, a short distance downstream from the Hailesboro #3 Mill powerhouse, for canoeists and persons with hand-carried boats;
- (3) as required by the Water Quality Certificate, shoreline access for fishing commensurate with safety concerns and land ownership constraints;
- (4) final locations and design drawings specifying dimensions and materials to be used;

- (5) site-specific measures to control erosion and sedimentation during, and subsequent to, construction of the proposed facilities;
- (6) a discussion of how the needs of the disabled were considered in the planning and design of each recreation facility;
- (7) a construction, operation, and maintenance schedule for each of the recreational facilities at the project;
- (8) provisions for improving the public information system regarding recreational resources on the reservoir; to also include a provision that the licensee provide a toll-free telephone number to provide daily flow conditions to the general public;
- (9) provisions for periodic monitoring recreation use of the project area to determine whether existing recreation facilities are meeting recreation needs, and for consulting with appropriate state and local government staff and recreational interest groups;
- (10) provisions for setting aside project land for future recreation needs; and
- (11) provisions for updating the recreation plan with the Commission in the event of proposals for major recreational enhancements not required by the license.

The licensee shall prepare the final recreational enhancement plan in consultation with the New York State Department of Environmental Conservation, the U.S. Fish and Wildlife Service, the town of Fowler, New York, the Adirondack Mountain Club, and American Whitewater. The licensee shall include with the plan documentation of consultation, copies of comments and recommendations received on the plan after it has been prepared and provided to the entities listed above, and the licensee's specific responses to the recommendations provided by the consulted entities. The licensee shall allow a minimum of 30 days for the consulted entities to comment and to make recommendations on the final recreational enhancement plan before filing it with the Commission. If the licensee does not adopt an entity's 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. No ground-disturbing or land-clearing activities for new recreational facilities shall begin until the Commission notifies the licensee that the plan is approved. Upon approval, the licensee shall implement the plan, including any changes required by the Commission. Any facilities built in accordance with this

plan shall be shown on the as-built drawings filed pursuant to Article 301 of this license.

Article 411. Historic Properties Management Plan. The licensee shall consult with the New York State Historic Preservation Officer (SHPO), and file for Commission approval, a Historic Properties Management Plan (HPMP), in the event that a property or properties included in or eligible for inclusion in the National Register of Historic Places (Historic Property or Historic Properties) may be affected under any or all of the following circumstances: (1) before starting any land-clearing or land-disturbing activities within the project boundaries, other than those specifically authorized in this license, including recreation facilities at the project; and (2) if, while operating the project, the licensee discovers a previously unidentified Historic Property that may be affected by the operation of the project. In the event of such a discovery, the licensee shall make every reasonable effort to protect the property from any adverse effects and immediately consult with the SHPO.

The HPMP shall be prepared by a qualified specialist and filed after the licensee has consulted with the SHPO. The HPMP shall accurately reflect the results of such consultation. In addition, the HPMP shall identify the specific circumstance or circumstances that require that an HPMP be filed (e.g., planned land-clearing or land-disturbing activities within the project boundaries, other than those authorized in this license; discovery of a previously unidentified Historic Property; or any combination thereof). Finally, the HPMP shall include the following items: (1) a description of the Historic Property or Historic Properties that may be affected; (2) a description of the potential effect or effects that may occur; (3) proposed measures for avoiding or mitigating any 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 HPMP. The licensee shall engage in no activities that may adversely affect a Historic Property or Historic Properties, nor resume any such activities, but shall make every reasonable effort to protect Historic Properties until informed by the Commission that the requirements of this article have been fulfilled.

Article 412. (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.

(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 Energy Projects, 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 public lands and reservations of the United States included within the project boundary.

(G) The licensee shall serve copies of any Commission

filing required by this order on any entity specified in the order to be consulted on matters relating to that filing. Proof of service on these entities must accompany the filing with the Commission.

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

By the Commission.

(S E A L)

Magalie R. Salas,
Secretary.

Project No. 6058-005 - 1-

Appendix A

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
WATER QUALITY CERTIFICATION
Hailesboro #4 Project (FERC No. 6058-
005)

The New York State Department of Environmental Conservation ("Department" or "NYS DEC") hereby certifies:

- * the Department has reviewed the certificate holder's Application for Federal Hydroelectric License (hereafter referred to as "the Application") and all other available pertinent information, including studies submitted in support of the application;
- * the project will comply with Sections 301, 302, 303, 306 and 307 of the Federal Water Pollution Control Act as amended and as implemented by the limitations, standards and criteria of the state statutory and regulatory requirements set forth in 6NYCRR Section 608.9(a); and
- * the project will comply with applicable New York State effluent limitations, water quality standards and thermal discharge criteria set forth in 6NYCRR Parts 700-706.

Water Quality Certification is issued pursuant to Section 401 of the Federal Water Pollution Control Act (33 USC 1341).

CONTACTS: Except as otherwise specified, all contacts with the

Department concerning this certificate shall be addressed to:

New York State Department of Environmental Conservation
Regional Permit Administrator
317 Washington Street
Watertown, NY 13601

Written submissions to the Department must include five (5) complete copies of the submission.

SPECIAL CONDITIONS

A. OVERSIGHT AND ADMINISTRATION

1. Inspections: The project, including relevant records, is subject to inspection at reasonable hours and intervals, upon reasonable notice to the certificate holder, by an authorized representative of the Department to determine whether the applicant is complying with this certification. A copy of this certification and the FERC license, including all maps, drawings, and special conditions, must be available for inspection by the Department during such inspections at the project.
2. Emergencies: For activities carried out at the project(s) in response to an emergency, the following procedures apply:

Prior to commencement of emergency activities, the NYS DEC must be notified and must determine whether to grant approval. If circumstances require that emergency activities be taken immediately such that prior notice to the NYS DEC is not possible, then the NYS DEC must be notified by the Certificate Holder(s) within 24 hours of commencement of the emergency activities. In either case, notification must be by certified mail, telegram, or other written form of communication, including fax and electronic mail. This notification must be followed within 3 weeks by submission of the following information:

- (1) a description of the action;
- (2) location map and plan of the proposed action;
- (3) reasons why the situation is an emergency.

All notifications, requests for emergency authorizations and information submitted to support such requests shall be sent to the Regional Permit Administrator at the address listed above.

3. Modifications and Revocations: The DEC reserves the right to modify or revoke this certificate when:
 - 1) the scope of the authorized activity is exceeded or a violation of any condition of this certificate or provisions of the ECL and pertinent regulation is found;

- 2) the certificate was obtained by misrepresentation or failure to disclose relevant facts;
- 3) new material information is discovered;
- 4) environmental conditions, relevant technology, or applicable law or regulation have materially changed since the certificate was issued.

B. OPERATING CONDITIONS

4. Project Operation: Project Operation shall be in accordance with the Application for New License, Hailesboro #4 Hydroelectric Project, FERC Project No. 6058-NY, dated December 2000. The project shall operate in a run of river mode of operation where inflow to the project impoundment is equal to outflow from the project. There shall be an active storage volume of zero.
5. Minimum Flows to Bypassed Reaches: The Certificate holder shall provide a continuous release to the bypassed reach. The minimum quantity to be released to the bypassed reach below dam #1 shall be 20 cfs. The minimum quantity to be released to the bypassed reach below dam #2 shall be 8 cfs. The minimum quantity to be released below dams #1 and #2 must be equal to the inflow into the impoundment (inflow) when that is less than 28 cfs. During Walleye spawning season, which is defined as beginning when water temperatures reach 4o C. for 4 consecutive days after March 15 and continuing until 30 days after water temperature reached 10o C, an additional 77 cfs must be released when the combined spillage and minimum flow release falls below 105 cfs.
6. Fish Protection: Fish protection provisions shall be provided in accordance with the application.
7. Flow Monitoring: The certificate holder shall monitor flows as described below. The certificate holder shall install all necessary gages and/or equipment for the purpose of:
 - a. determining project flows through the bypass/diversion reach, and;
 - b. determining project headpond elevation, and;
 - c. determining flows in the river below the project.

The certificate holder shall keep accurate records of the foregoing flow data and shall provide such data in a format and interval as the Department may request.

In addition, permanent staff gauges or other visual markers shall be installed to provide independent verification of headpond elevation and base and bypass flows.

8. Impoundment Fluctuations:

The impoundment shall not be drawn down more than 3 inches

below the top of the flashboards, or top of crest when flashboards are not in. This condition may be modified temporarily by emergencies beyond the control of the certificate holder, or for short periods upon agreement with the Department. The Department must be notified within 24 hours of any emergency situations.

C. PROJECT MAINTENANCE AND CONSTRUCTION

note: All matters pertaining to "Project Maintenance and Construction" shall be addressed to:

Regional Permit Administrator
New York State Department of Environmental Conservation
317 Washington Street Watertown, New York 13601

9. Maintenance Dredging: The certificate holder shall install and maintain appropriate turbidity control structures while conducting any maintenance dredging activities in the Oswegatchie River.
10. Sediment Analysis and Disposal: The certificate holder must sample any sediments to be disturbed or removed from the project waters and test them for contaminants. Sampling and testing shall be accomplished according to a protocol submitted to and approved by the Department prior to sampling.

Prior to dredging or other excavation, the certificate holder must secure Department approval for all disposal locations for any sediments to be removed from the project waters.

11. Erosion and Sediment Control: The certificate holder shall ensure that the following erosion and sediment controls measures, at minimum, are adhered to during routine maintenance and construction that may result in sediments and/or contaminants entering the Oswegatchie River.
 - a. Isolate in-stream work from the flow of water and prevent discolored (turbid) discharges and sediments caused by excavation, dewatering and construction activities from entering the waters of the Oswegatchie River;
 - b. Prohibit heavy construction equipment from operating below the mean high water level of the Oswegatchie River until the work area is protected by an appropriate turbidity control structure;
 - c. Minimize soil disturbance, grade so as to prevent or minimize erosion and provide temporary and permanent stabilization of all disturbed areas and stockpiles to minimize the potential for erosion and sedimentation within the Oswegatchie River;

- d. Protect all waters from contamination by deleterious materials such as wet concrete, gasoline, solvents, epoxy resins or other materials used in construction, maintenance and operation of the Project.
 - e. Install and maintain erosion control structures on the down slope of all disturbed areas to prevent eroded material from entering the Oswegatchie River. Erosion control structures must be installed before commencing any activities involving soil disturbance and all erosion control structures must be maintained in a fully functional condition;
 - f. Ensure complete removal of all dredged/excavated material and construction debris from the bed and banks of the Oswegatchie River;
 - g. Ensure that all temporary fill and other materials placed in the waters of the Oswegatchie River are completely removed immediately upon completion of construction, unless otherwise directed by the Department.
12. Placement of cofferdams, construction of temporary access roads or ramps, or other temporary structures which encroach upon the bed or banks of the Oswegatchie River: The design of all such structures must be approved by the Department prior to installation.
- a. All fish trapped within the confines of a cofferdam during the dewatering process shall be immediately captured and returned alive and unharmed to unrestricted waters adjoining the containment area.
13. Construction Drawdowns: Whenever construction and/or maintenance activities require lowering the water level of the Project's impoundments below normal operating limits, the water level shall not be drawn down more than 1 foot per hour. During refill of the impoundment, 50% of inflow to the impoundment shall be released to the river, and 50% shall be used to refill the impoundment.
14. River Flow: During any period of maintenance and/or construction activity, the certificate holder shall continuously maintain adequate flows immediately downstream of work sites as provided for in this certificate.
15. Turbidity Monitoring: During maintenance or construction-related activities in or near the Oswegatchie River, the certificate holder will monitor the turbidity of project waters at a point immediately upstream of the work area and at a point no more than 100 feet downstream from the work area. The certificate holder specifically agrees that if, at any time, turbidity measurements from the downstream locations exceed background, the measurements from the

upstream locations, all related construction on the project will cease until the source of the turbidity is discovered and remediated such that turbidity is returned to a pre-construction condition.

16. Notifications: The Regional Permit Administrator must be notified in writing at least two weeks prior to commencing any work performed under the authority of this certificate.

D. PUBLIC ACCESS

17. The following recreational improvements will be provided; subject to Department review and approval.

- a) canoe portage route around the dam.
- b) shoreline access for fishing commensurate with safety concerns and land ownership constraints.

Appendix B

MULTIPLE PROJECT
FINAL ENVIRONMENTAL ASSESSMENT
FOR HYDROPOWER LICENSES

Hailesboro #4 Project
FERC Project No. 6058-005

Fowler #7 Project
FERC Project No. 6059-006

New York

Federal Energy Regulatory Commission
Office of Energy Projects
Division of Environmental and Engineering Review
888 First Street, NE
Washington, DC 20426

October 2002
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ACRONYMS AND ABBREVIATIONS

ADK	Adirondack Mountain Club
APE	area of potential effect
AR	American Rivers
AW	American Whitewater
BWEC	Barnes-Williams Environmental Consultants, LLC
C	Celsius
cfs	cubic feet per second
CHI	CHI Energy, Inc.
Commission	Federal Energy Regulatory Commission
CWA	Clean Water Act
CZMA	Coastal Zone Management Act
EA	Environmental Assessment
ESA	Endangered Species Act
ESCP	erosion and sediment control plan
FPA	Federal Power Act
fps	foot, feet per second
FWS	U.S. Fish and Wildlife Service
GWh	gigawatt-hours
HDG	Hydro Development Group, Inc.
Interior	U.S. Department of the Interior
kV	kilovolts
kW	kilowatts
kWh	kilowatt-hours
mg/L	milligrams per liter
MW	megawatts
National Register	National Register of Historic Places
NEPA	National Environmental Policy Act
NERC	North American Electric Reliability Council
NGO	non-governmental organizations
NGVD	National Geodetic Vertical Datum
NHI	Natural Heritage Institute
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NMPC	Niagara Mohawk Power Corporation
NPCC	Northeast Power Coordinating Council
NWI	National Wetlands Inventory
NYISO	New York Independent System Operator
NYRU	New York Rivers United
NYSDEC	New York State Department of Environmental Conservation
O&M	operation and maintenance
RM	river mile
ROR	run-of-river
SD1	Scoping Document 1
SD2	Scoping Document 2
SHPO	State Historic Preservation Officer
USGS	U.S. Geological Survey
WQC	Water Quality Certification

SUMMARY

Hydro Development Group, Inc. (HDG) proposes to continue to operate the existing Hailesboro #4 and Fowler #7 Projects located on the Oswegatchie River near the village of Gouverneur, in St. Lawrence County, New York. Hailesboro #4 Project consists of two dams; #1 and #2. Fowler #7 Project consists of three dams; #1, #2, and #3. The projects have installed capacities of 1,490 kilowatts (kW) and 900 kW, respectively. The projects do not occupy any federal lands.

The Federal Energy Regulatory Commission staff (staff) issued a Draft Environmental Assessment (DEA) for comment on June 28, 2002. In response we received four comment letters. We have reviewed and responded to the comment letters received on the DEA. The sections of the environmental assessment (EA) that have been modified as a result of comments are identified in our responses to the letters of comment (see Appendix A).

In this EA, we analyze the effects of continued operation of the projects and recommend conditions for new licenses. Based on our analysis, we recommend licensing the projects as proposed by HDG with some additional staff-recommended measures. Our staff recommendations include or are based, in part, on recommendations made by federal and state resource agencies that have an interest in the resources that may be affected by the continued operation of the projects.

HDG proposes to (1) continue operating the projects in a run-of-river (ROR) mode; (2) provide minimum flows of 20 cubic feet per second (cfs) from dam #1, 8 cfs from dam #2, and a total of 105 cfs below the dams #1 and #2 during walleye spawning season at the Hailesboro #4 Project; (3) provide a minimum flow of 16.5 cfs below dam #3 at the Fowler #7 Project; (4) modify the outflow of the trash sluice gate at the Hailesboro #4 Project to minimize injury to fish passing downstream; (5) consult with fish and wildlife agencies regarding the need for trashracks with 1-inch clear spacing when the existing trashracks need replacement at both projects; (6) and provide a small portage take-out near the Fowler #7 powerhouse and signs directing to a river access put-in downstream of the Hailesboro #3 Mill Project.

The additional measures we recommend for the projects include: (7) develop site-specific erosion control plans; (8) limit impoundment fluctuations to within 3 inches of the top of the flashboards or crest of the dams when the flashboards are not in place; (9) continue to use and maintain pneumatic flashboards at dam #1; (10) develop an operations compliance plan to monitor flows and headpond elevations at both projects, and temperatures at the Hailesboro # 4 Project; (11) provide parking at the portage take-out and put-in areas; (12) provide boating and angler access to the Hailesboro # 4 impoundment and upstream and downstream of the Fowler #7 powerhouse with additional parking at both locations; (13) develop a final recreation plan; (14)

consult with the State Historic Preservation Officer (SHPO) prior to any ground-disturbing activities; (15) develop a woody debris management plan; (16) include the Island Branch diversion dam as part of the licensed facilities for the Hailesboro #4 Project, and (17) require a 30 cfs minimum flow released from the fixed weir at the Island Branch diversion dam.

Implementation of HDG's proposals with these additional staff-recommended measures at the Hailesboro #4 and Fowler #7 Projects would cost about \$544,770 and \$144,200 annually and result in net annual benefits of \$2,850 and \$160,030, respectively. The projects would generate 10,243,000 kW and 5,623,000 kilowatt-hours (kWh) of electricity, respectively. Our recommended alternative would reduce total generation by 595,000 kWh as compared to current generation at the projects.

We recommend these measures for both projects to protect and enhance water quality, fisheries, recreational, and cultural resources. In addition, the electricity generated from the projects would be beneficial, because it would continue to reduce the use of fossil-fueled, electric generating plants; conserve nonrenewable energy resources, and continue to reduce atmospheric pollution.

The New York State Department of Environmental Conservation (NYSDEC) issued state Water Quality Certifications (WQCs), pursuant to Section 401 of the Clean Water Act (CWA), for the Hailesboro #4 and Fowler # 7 Projects on December 21, 2001. Our staff recommendations are consistent with the WQC conditions for both projects.

Section 10(j) of the Federal Power Act (FPA) requires the Federal Energy Regulatory Commission (Commission) to include license conditions based on recommendations provided by the federal and state fish and wildlife agencies. In our draft EA we made a preliminary determination that the U.S. Department of the Interior's (Interior's) recommendation, to maintain the reservoir water level at the top of the flashboards or crest of the dam when the flashboards are not in place, may conflict with public interest and comprehensive planning standards of Section 4(e) and 10(a) of the FPA. In addition, Interior made a recommendation for the Hailesboro #4 Project that pertains to the operation of an unlicensed structure (a 30 cfs minimum flow at the Island Branch diversion dam). These issues were resolved in whole during a 10(j) meeting held between agencies and Commission staff on August 12, 2002. In this final EA, we have addressed the concerns of the Federal and state fish and wildlife agencies and make recommendations consistent with those of the agencies. Therefore, there is no inconsistency with section 10(j) of the FPA.

Under Section 18 of the FPA, Interior requested that the Commission reserve authority for Interior to request fishways at these projects as may be necessary during the term of any

licenses issued. We recommend including in any licenses issued for the two projects, a reservation of authority for Interior to request fishways.

On the basis of our independent analysis, we conclude that issuing new licenses for these projects, with the environmental measures that we recommend, would not constitute major Federal actions significantly affecting the quality of the human environment.

Project No. 6058-005 - 1 -
ENVIRONMENTAL ASSESSMENT

Federal Energy Regulatory Commission
Office of Energy Projects
Division of Environmental and Engineering Review
Washington, DC

Hailesboro #4 Project
FERC No. 6058-005

Fowler #7 Project
FERC No. 6059-006
New York

I. PURPOSE AND NEED FOR ACTION

A. Application and Purpose of Action

On January 2, 2001, Hydro Development Group, Inc., (HDG) filed applications with the Federal Energy Regulatory Commission (Commission) for new minor licenses for the existing Hailesboro #4 and Fowler #7 Projects. The projects are located on the Oswegatchie River in St. Lawrence County, near the village of Gouverneur, New York (figure 1). The 1,490-kilowatt (kW) Hailesboro #4 Project and the 900-kW Fowler #7 Project annually generate an average of 10,600,000 kilowatt-hours (kWh) and 5,700,000 kWh, respectively. The projects do not occupy any federal lands. HDG proposes no new capacity and no new construction at either project.

The Commission must decide whether to license HDG's proposed projects, and what, if any, conditions should be placed on any licenses issued. In this environmental assessment (EA) we assess the environmental and economic effects of: (1) operating the projects as HDG proposes; (2) operating the projects as HDG proposes with additional staff-recommended measures; and (3) no action.

B. Need for Power

The Hailesboro #4 and Fowler #7 Projects are owned and operated by HDG, a subsidiary of CHI Energy, Inc. (CHI), which is a private owner, operator, and developer supplying electricity to wholesale customers. The 1,490-kW Hailesboro #4 and 900-kW

Fowler #7 Projects represent less than 1 percent of the total installed capacity of 345.2 megawatts (MW) that HDG owns, operates or manages, of which 253.7 MW is provided

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Figure 1. Project Vicinity. (Source: Staff)

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by 77 hydroelectric facilities (CHI, 2001). HDG, a subsidiary of CHI, owns and operates six hydroelectric projects, totaling 10,160 MW, which constitute 24% of HDG's total generating capacity. The projects operate as run-of-river (ROR) facilities and contribute to HDG's electric generating resources.

To see how the demand for electricity is expected to change in the future in HDG's operating area, we looked at the regional need for power as reported by the North American Electric Reliability Council (NERC) for its Northeast Power Coordinating Council (NPCC) region. The projects are located in the New York control area, and are coordinated by the New York Independent System Operator (NYISO), of the NPCC region. The NYISO coordinates the electric supply for all of New York State. The Northern New York area where the projects are located is primarily a winter-peaking area. For the period 2000 through 2010, NPCC estimates peak demand and annual energy requirements in the NYISO area to grow at annual compound rates of 1.3 and 1.2 percent, respectively.

NPCC expects that existing capacity within New York and known purchases and sales within neighboring control areas will provide sufficient capacity to meet the required 18 percent installed reserve margins for the year 2001. Beyond 2001, NPCC has stated that New York is showing a deficiency in the capacity reported to meet the 18 percent installed reserve margin. Approximately 6,590 MW of new capacity has been approved within the New York process and approximately 6,500 MW of additional capacity is in the pre-approval stage of the process. NPCC expects that 7,200 MW of new capacity may be available by 2004 (NERC, 2001). We conclude that the region has a need for power over the near term and that the Hailesboro #4 and Fowler #7 Projects, which supply a part of the current regional electricity demand, could continue to help meet part of the regional need for power.

Locally, HDG sells the power from the projects to Niagara Mohawk Power Corporation (NMPC) via a long-term sales agreement and feeds the power into NMPC's transmission and distribution system.

If licensed, the power from the projects would continue to be useful in meeting HDG's needs as well as meeting a small part of the local and regional need for power. The projects displace fossil-fueled electric power generation the regional utilities now use, and thereby conserve nonrenewable fossil fuels and reduce the emission of noxious by-products caused by the

combustion of fossil fuel.

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II. PROPOSED ACTION AND ALTERNATIVES

The proposed action is to issue new licenses for the continued operation and maintenance of the Hailesboro #4 and Fowler #7 Projects on the Oswegatchie River in St. Lawrence County, New York, with a few specific operational and environmental enhancements.

A. Applicant's Proposed Action

HDG proposes to continue operating the Hailesboro #4 Project as a ROR project with a minimum flow of 20 cubic feet per second (cfs) from dam #1, and a minimum flow of 8 cfs (current leakage) from dam #2. During the walleye spawning season (April 1 to June 10 each year), HDG proposes to increase minimum flows in the Middle Branch to 105 cfs. In addition, HDG proposes to maintain a minimum flow of 30 cfs in the "Island Branch" of the Oswegatchie River. The facility required to maintain the Island Branch flow, the Island Branch diversion dam and weir, is not part of the proposed Hailesboro #4 Project. The current license for the Hailesboro #4 Project expires on December 31, 2002.

HDG proposes to continue operating the Fowler #7 Project as a ROR project with a minimum flow of 16.5 cfs released into the overflow channel of dam #3. The current license for the Fowler #7 Project expires on October 31, 2002.

1. Description of Project Facilities and Existing Project Operations

Hailesboro #4 Project

The existing, operating Hailesboro #4 Project (see figure 2) consists of: (1) a concrete gravity-type dam comprising: (1) the 92-foot-long, 14-foot-high dam #1 surmounted by a 2-foot-high pneumatic crest gate with an effective dam crest elevation of 459.02 feet NGVD, dam #2 surmounted by 2-foot-high wooden flashboards and a dam crest elevation of 459 feet NGVD; (2) a reservoir with a 2-acre surface area and a gross storage volume of 20 acre-feet at normal water surface elevation 461 feet National Geodetic Vertical Datum (NGVD); (3) a gated intake structure with steel trashracks which have a 1.75-inch clear spacing; (4) a 170-foot-long concrete-lined forebay canal with a sluice gate; (5) a reinforced concrete and concrete masonry powerhouse containing two horizontally mounted, double runner, Francis-type generating units; one 640-kW generating unit and one 850-kW generating unit for a total installed capacity of 1,490 kW; (6) a 2.4/23-kilovolt (kV) substation; (7) a 50-foot-long,

Figure 2. Hailesboro #4 Project facilities and proposed recreational facilities.

(Source: Staff)

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23-kV transmission line; (8) a tailrace; and (9) appurtenant facilities. The applicant estimates that the total average annual generation of the existing project is 10,600,000 kWh.

The Hailesboro #4 Project does not currently include the Island Branch diversion dam located at the mouth of the Island Branch bypass reach, however, in this EA we recommend including this structure in any new license issued by the Commission. The Island Branch diversion dam is a 73-foot-long concrete gravity dam, topped with 1-foot-high wooden flashboards. The dam crest elevation is approximately 487.5 feet MSL. A fixed notch in the dam, 5-foot-wide by 2.1-foot-deep provides a continuous minimum flow of 30 cfs in the Island Branch bypass reach. The dam was built in 1985 and is currently not part of any FERC licensed or exempted project. The dam serves a dual purpose. During low river flows, it provides a minimum flow of 30 cfs in the bypass reach. During high river flows, it diverts flows greater than 30 cfs along the Oswegatchie River for the benefit of downstream hydropower generation. HDG owns the diversion dam and has access rights for maintaining the dam, which HDG has done since 1985.

Fowler #7 Project

The existing, operating Fowler #7 Project (see figure 3) consists of: (1) three concrete gravity-type overflow structures surmounted by wooden flashboards that include: (I) the 75-foot-long, 25-foot-high dam #1 with 10-inch-high flashboards and dam crest elevation of 541.2 feet NGVD; (ii) the 192-foot-long, 20-foot-high dam #2 with 22-inch-high flashboards and dam crest elevation of 540.07 feet NGVD; and (iii) the 154-foot-long, 15-foot-high dam #3 with 17-inch-high flashboards and dam crest elevation of 540.63 feet NGVD; (2) a reservoir with a 3-acre surface area and a gross storage volume of 30-acre-feet at normal water surface elevation of 542 feet NGVD; (3) an intake structure consisting of a 51-foot by 24-foot concrete forebay with steel trashracks that have a 1.75-inch clear spacing; (4) a reinforced concrete and concrete masonry powerhouse containing three 300-kW, vertically mounted Francis-type generating units for a total installed capacity of 900-kW; (5) a 1,000-kVA, 2.3/23-kV transformer; (6) a 4,000-foot-long, 23-kV overhead transmission line; (7) a tailrace; and (8) appurtenant facilities. The applicant estimates that the total average annual generation of the existing project is 5,700,000 kWh.

2. Applicant's Proposed Environmental Measures

Hailesboro #4 Project

HDG proposes to continue operating the Hailesboro #4 Project as a ROR project as follows:

- * provide a minimum flow of 20 cfs below dam #1 via the sluice gate;

- * maintain a minimum flow of 8 cfs (existing leakage) from dam #2; and
- * maintain a minimum flow of 30 cfs in the Island Branch of the Oswegatchie River via a release through a notched weir at Island Branch diversion dam. The 30 cfs flow is part of an agreement with NYSDEC and the U.S. Fish and Wildlife Service (FWS).

In addition, to protect, mitigate adverse effects on, and enhance project-related environmental resources, HDG proposes the following environmental measure for the Hailesboro #4 Project:

- * during walleye spawning season (April 1-June 10), provide a total of 105 cfs in the Middle Branch of the Oswegatchie River when the combined spillage and minimum flow release is below 105 cfs;
- * modify outflow of the trash sluice gate to minimize injury to any fish passing downstream via the 20-cfs minimum flow at dam #1;
- * consult with the U.S. Department of the Interior (Interior) and the New York State Department of Environmental Conservation (NYSDEC) regarding the need for trashracks with a 1-inch clear spacing when the existing racks need replacement; and
- * clean debris from Mr. Wranesh's property as needed.

The expected annual generation of the project as proposed by HDG would be 10,243,000 kWh.

Fowler #7 Project

HDG proposes to continue operating the Fowler #7 Project as a ROR project as follows:

- * maintain a minimum flow of 16.5 cfs into the overflow channel below dam #3 released from a notch in the flashboards on dam #3; and
- * consult with Interior and NYSDEC regarding the need for trashracks with a 1-inch clear spacing when the existing racks need replacement.

Figure 3. Fowler #7 Project facilities and proposed recreational facilities.

(Source: Staff)

In addition, to protect, mitigate adverse effects on, and enhance project-related environmental resources, HDG proposes the

following environmental measure for the Fowler #7 Project:

- * provide a small boat/canoe take-out site upstream of the Fowler #7 powerhouse, along with appropriate signs and directions to a river access point downstream of the Hailesboro #3 Project.

The expected annual generation of the project as proposed would be 5,623,000 kWh.

B. Proposed Action with Additional Staff-recommended Measures

In addition to, or in lieu of, HDG's proposed measures, we recommend the following measures:

Hailesboro #4 Project

- * implement erosion control measures specified in a site-specific erosion and sediment control plan (ESCP) during project maintenance and construction involving ground disturbance;
- * limit impoundment elevation levels to within 3 inches of the top of the flashboards or crest of the dam when the flashboards are not in place;
- * continue to use and maintain pneumatic flashboards at dam #1;
- * develop and implement an operations compliance plan to monitor flows, headpond levels, and temperatures including provision of all necessary gages and equipment;
- * provide parking at the portage put-in area;
- * provide access to the impoundment and additional parking for boating and fishing;
- * develop and implement a final recreation plan; and
- * consult with the State Historic Preservation Officer (SHPO) prior to any ground-disturbing activities.

Fowler #7 Project

- * implement erosion control measures specified in a site-specific ESCP during project maintenance and construction involving ground disturbance;
- * limit impoundment elevation levels to within 3 inches of the top of the flashboards or crest of the dam if the flashboards have failed;

- * develop and implement an operations compliance plan to monitor flows and headpond levels including provision of all necessary gages and equipment;
- * ensure that the minimum flow release structure at dam #3 is "fish friendly";
- * provide parking at the portage take-out area;
- * provide boating and angler access with parking to the impoundment and reach downstream of the powerhouse;
- * develop and implement a final recreation plan; and
- * consult with the SHPO prior to any ground-disturbing activities or non-routine maintenance of project facilities.

C. No Action

Under the no-action alternative, the project would continue to operate and no new measures would be implemented. We use this alternative to establish baseline environmental conditions for comparison with other alternatives.

D. Alternatives Considered but Eliminated from Detailed Study

We considered several other alternatives to HDG's relicensing proposals but eliminated them from detailed study because they are not reasonable in the circumstances of these proceedings. They are: (1) federal takeover and operation of the project; (2) issuing a nonpower license for the project; and (3) retirement of the project.

Sections 14 and 15 of the Federal Power Act (FPA), relating to federal takeover, have been waived in the original licenses, therefore federal takeover is not a viable alternative as the projects are not subject to federal takeover.

A nonpower license is a temporary license that the Commission would terminate whenever it determines that another governmental agency would assume regulatory authority and supervision over the lands and facilities covered by the nonpower license. In these proceedings, no agency has suggested its willingness or ability to do so. No party has sought a nonpower license, and because the power is needed, we have no basis for concluding that the project should no longer be used to produce power, as long as it is economically beneficial to do so. Thus, a nonpower license is not a realistic alternative to relicensing in these circumstances.

Project retirement could be accomplished with or without dam removal, but either alternative would involve denial of the license application and cessation of power generation. Dam

removal would restore a free-flowing river with its riverine habitat and associated flora and fauna, eliminate any fish entrainment mortality that may be occurring, provide unobstructed fish passage past the site, and provide unobstructed recreational riverine boating.

However, while we recognize these potential benefits, we do not regard this alternative as reasonable, because it would result in the loss of needed electric power generation and potential environmental harm. For example, dam removal could result in sediments accumulated behind the dam being washed downstream, currently viable lacustrine habitats converted to riverine habitats, loss of wetlands associated with the impoundment, loss of some recreational opportunities geared to current water levels, and change in the aesthetic quality of the affected river reach.

The second project retirement alternative would involve retaining the dam and disabling or removing equipment used to generate power. Project works would remain in place and could be used for historic or other purposes. This would require us to identify another government agency with authority to assume regulatory control and supervision of the remaining facilities. No agency has stepped forward, and no participant has advocated this alternative, nor have we any basis for recommending it. Because the power supplied by the project is needed, a source of replacement power would have to be identified. In these circumstances, we do not consider removal of the electrical generating equipment to be a reasonable alternative.

III. CONSULTATION AND COMPLIANCE

A. Agency Consultation and Interventions

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.

1. Scoping

Before preparing this EA, we conducted scoping for the Hailesboro #4 and Fowler #7 Projects to determine what issues and alternatives should be addressed. Scoping Document 1 (SD1) was made available to agencies and other interested parties on September 27, 2001. We conducted a publicly noticed site visit on October 11, 2001. In addition to comments provided at the site visit, the following entities provided written comments pertaining to the projects:

|Commenting Entity |Date of Letter |

|HDG |November 2, 2001|

|American Whitewater|November 5, 2001|

We issued Scoping Document 2 (SD2) on February 7, 2002, for informational use by all interested parties. No response was required. However, the Natural Heritage Institute (NHI) filed comments on SD2, by letter dated April 1, 2002, in response to the notice that the applications were ready for environmental analysis.

2. Interventions

Organizations and individuals also may petition to intervene and become a party to subsequent proceedings. On July 23, 2001, the Commission issued notices that HDG, on January 2, 2001, filed applications to license the Hailesboro #4 and Fowler #7 Projects. These notices set September 21, 2001, as the deadline for filing protests and motions to intervene. In response to the public notice, the following entities filed motions to intervene in, but not in opposition to, the proceedings:

Intervener

Date of Motion

|New York State Department of Environmental Conservation|August 8, 2001 |

|U.S. Department of the Interior |September 17, 2001|

|New York Rivers United[30] |September 24, 2001|

|American Whitewater [31] |November 5, 2001 |

We address intervener concerns in the environmental analysis section (section IV) of this EA.

3. Comments on the Applications

The Commission issued a Public Notice on January 31, 2002, saying that the applications for the Hailesboro #4 and Fowler #7 Projects were ready for environmental analysis and that all comments should be filed within 60 days of the notice. The following entities commented:

Commenting Entities

Date of Letter

|New York State Department of Environment Conservation|March 29, 2002|

|U.S. Department of the Interior |March 29, 2002|

|Natural Heritage Institute[32] |April 1, 2002 |

HDG replied to the recommendations, terms, and conditions by letter dated May 16, 2002.

4. Comments on the Draft Environmental Assessment

The Commission issued an Environmental Assessment for the proposed licensing of the Hailesboro #4 and Fowler #7 Project on June 28, 2002. The following entities filed comments pertaining to the EA. Appendix A includes a summary of the comment letters and our responses to the individual comments within them. This EA was revised as a result of those comments.

Commenting Entity	Date
Adirondack Mountain Club (ADK)	of Letter July 26, 2002
Hydro Development Group, Inc. (HDG)	July 29, 2002
New York Rivers United, American Rivers, and American Whitewater (NYRU, AR & AW)	July 29, 2002
New York State Department of Environmental Conservation (NYSDEC)	July 30, 2002

B. Mandatory Requirements

1. Water Quality Certification

Under Section 401(a)(1) of the Clean Water Act (CWA), license applicants must obtain either state certification that any discharge from a project would comply with applicable provisions of the CWA or a waiver of certification by the appropriate state agency.

On January 3, 2001, HDG applied to the NYSDEC for Water Quality Certifications (WQCs) for the Hailesboro #4 and Fowler #7 Projects, as required by Section 401 of the CWA. NYSDEC issued WQCs for the Hailesboro #4 and Fowler #7 Projects on December 21, 2001. As discussed in section VI, we make determinations consistent with the terms of the WQC.

Each WQC contains 17 special conditions. Oversight and administration conditions include procedures for: (1) compliance inspections; (2) responses to emergencies; and (3) modification of the WQCs.

Operating conditions include requirements for: (4) ROR operation where inflow equals outflow with zero active storage; (5) release of continuous minimum flow at the Hailesboro #4 Project of 20 cfs, or inflow, below dam #1 and 8 cfs, or inflow, below dam #2 with a total of 105 cfs during walleye spawning season[33] when combined spillage and minimum flows fall below 105 cfs, and at the Fowler #7 Project of 16.5 cfs or inflow, released from dam #3; (6) fish protection consistent with the proposals in the applications; (7) flow monitoring devices, including permanent staff or other visual markers, to determine headpond elevations, flow through the bypassed reaches, and flow into the river below the project; and (8) limitation of impoundment levels to no more than 3 inches below the top of the flashboards or crest of the dams when flashboards are not in place, with a provision for emergencies.

Project maintenance and construction conditions provide for: (9) appropriate turbidity control structures while conducting any maintenance dredging in the river; (10) testing of any sediments to be removed, and prior approval of disposal locations of any contaminated sediments; (11) approval and implementation of erosion control measures prior to commencing any activities that could adversely affect water quality; (12) design of any temporary structures that could encroach on the river bed or bank in accordance with approved erosion control measures; (13) limitations on drawdowns and refill rates; (14) maintenance of flows to maintain water quality standards throughout any construction period; (15) monitoring potential turbidity during any construction activity and taking corrective action when turbidity occurs; and (16) notifying NYSDEC at least 2 weeks prior to any work subject to conditions 9 through 15.

Public access conditions include a provision for: (17) a canoe portage around the dams and shoreline access for fishing commensurate with safety concerns and land ownership constraints at both projects, and a small boat/canoe take out location near the Fowler #7 powerhouse and signage with directions to a put-in site below the Hailesboro #3 Project.

2. Section 18 Fishway Prescriptions

Section 18 of the FPA provides that the Commission must require a licensee to construct, operate, and maintain such fishways as may be prescribed by the Secretary of the Interior or the Secretary of Commerce. By letter dated March 29, 2002, Interior requested that we reserve our authority to require the construction, operation, and maintenance of such fishways as Interior may prescribe in the future, including measures to evaluate the need for fishways and to determine, ensure, or improve the effectiveness of such fishways. Interior states that this reservation includes authority to prescribe fishways at these projects for any fish species to be managed, enhanced, protected, or restored to the basin during the term of the

licenses.

We recognize that future fish passage needs and management objectives cannot always be predicted at the time of license issuance. Section 18 of the FPA provides the Secretary of the Interior and Secretary of Commerce the authority to prescribe fishways. Although fishways may not be prescribed by Interior or Commerce at the time of project licensing, upon receiving a specific request from Interior or Commerce, it is appropriate for the Commission to include a license article that reserves their prescription authority when so requested. Therefore, staff recommends that a license article be included that reserves Interior's and Commerce's authority to prescribe fishways.

3. Endangered Species Act

Section 7 of the ESA requires federal agencies to ensure that their actions are not likely to jeopardize the continued existence of endangered or threatened species or result in the destruction or adverse modification of the critical habitat of such species. By letter dated April 5, 2002, Interior stated that, except for occasional transient individuals, no federally listed or proposed endangered or threatened species under their jurisdiction are known to exist in the projects' impact areas. In addition, no habitat in the projects' impact area is currently designated or proposed "critical habitat."

The bald eagle (*Haliaeetus leucocephalus*), a federally listed threatened species, and osprey (*Pandion haliaetus*) use the Oswegatchie River corridor during migration and can be expected to occur as transients at these times (letter from D. Stilwell, Acting Supervisor, FWS, Cortland, NY, to the Commission, dated April 5, 2002). We believe that project operation, with our staff-recommended measures, is not likely to adversely affect the bald eagle or osprey or their habitats.

There are no endangered or threatened species under the jurisdiction of the National Marine Fisheries Service (NMFS) present in the Oswegatchie River and no essential fish habitat has been designated in the projects' vicinities pursuant to the Magnuson Stevens Fishery Conservation and Management Act (letter from S. Gorski, Field Offices Supervisor, NMFS, Highlands, NJ, to the Commission, dated December 11, 2001).

4. Section 10(j) Recommendations

Under Section 10(j) of the FPA, each license issued by the Commission must include conditions based on recommendations provided by federal and state fish and wildlife agencies for the protection, mitigation, or enhancement of fish and wildlife resources affected by the project. The Commission is required to include these conditions unless it determines that they are inconsistent with the purposes and requirements of the FPA or other applicable law. Before rejecting or modifying an agency

recommendation, the Commission is required to attempt to resolve any such inconsistency with the agency, giving due weight to the recommendations, expertise, and statutory responsibilities of such agency.

Interior includes Section 10(j) recommendations in its letter dated March 29, 2002. The agency-recommended measures include ROR operation, reservoir water level restrictions, minimum flow requirements, compliance monitoring, and fish protection measures. Tables 8 and 9 in section VII, Recommendations of Fish and Wildlife Agencies, list each of the recommendations subject to Section 10(j) and whether we recommend adopting the measures under the staff alternative. Recommendations that we consider outside the scope of Section 10(j) are considered under Section 10(a) of the FPA. We address all the recommendations in the specific resource sections of this EA.

5. Coastal Zone Management Act

Section 307(c)(3) of the Coastal Zone Management Act (CZMA) requires that all federally licensed and permitted activities be consistent with approved state Coastal Zone Management Programs. If a project is located within a coastal zone boundary or if a project affects a resource located in the boundaries of the designated coastal zone, the applicant must certify that the project is consistent with the state Coastal Zone Management Program.

The Hailesboro #4 and Fowler #7 Projects are located just upstream of a New York State-designated coastal zone management area. The coastal zone program in New York is administered by the New York Department of State, Division of Coastal Resources and Waterfront Revitalization (NYDS). HDG requested a coastal zone consistency determination for the Hailesboro #4 and Fowler #7 Projects from the NYDS by letter dated August 3, 2001.

By letter dated August 17, 2001 the NYDS indicated that the projects are not within a coastal zone, but emphasized that location of a project within the coastal zone is not the determinant with regard to whether or not the activity is subject to the consistency provisions of the CZMA. Because the projects operate run-of river, flows outside the project boundary will remain unchanged. The projects, as recommended, would not affect land or water use or natural resources outside the project boundary. Our conclusions regarding CZMA consistency certification for these projects will be addressed in any order issued for the Hailesboro #4 Project or Fowler #7 Project.

IV. ENVIRONMENTAL EFFECTS

A. General Description of the Oswegatchie River Basin

The headwaters of the Oswegatchie River are in the

Adirondack Mountains and the river flows generally in a westerly direction until taking a northerly turn before entering the St. Lawrence River at Ogdensburg, New York. The topography of the basin is characterized by mountains to the east and areas of small hills with exposed bedrock to the west as elevations decrease toward the St. Lawrence River. The basin drains an area of 1,034 square miles, including 82,814 acres of wetlands and 1,344 miles of streams. Water use from the river includes water supply to the village of Gouverneur, as well as industrial and recreational uses. Annual precipitation in the basin averages 37 inches of rain and 77.6 inches of snowfall and average temperatures range from a low of -8.3 degrees F in January to a high of 76 degrees F in July.

The projects are located in a remote area surrounded by undeveloped, privately owned land. Farmlands exist in the general vicinity; however, none are adjacent to the project boundaries. Access to the river is limited, except for occasional private roads.

There are 11 hydroelectric projects (17 developments) along the 132-mile length of the river (see table 1).

B. Scope of the Cumulative Effects Analysis

According to the Council on Environmental Quality's regulations for implementing the National Environmental Policy Act (NEPA) (* 1508.7), a cumulative effect is the impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency or person undertakes such other actions. Cumulative effects can result from individually minor but collectively significant actions taking place over time.

We have determined that aquatic and recreational resources may be affected in a cumulative manner by the relicensing of the Haillesboro #4 and Fowler #7 Projects; and by other activities on the Oswegatchie River. These other activities include the operation of other hydroelectric projects on the river, flow releases from other projects, and/or municipal and other wastewater discharges.

Table 1. Hydroelectric projects on mainstem of Oswegatchie River (upstream to downstream). (Source: Staff)

Project Name	Project No.	FERC Status	Issued	Expires	Capacity (kW)
Cranberry Lake	9685	Licensed	04/27/1987	03/31/2027	595
Newton Fallsa	7000	Licensed	02/28/1984	01/31/2004	2,220
Oswegatchie Riverb	2713	Licensed	01/10/1983	12/31/2012	28,471
Taleville	4402	Exempt	06/16/1983	NA	1,000
Emeryville	2850	Licensed	06/17/1982	05/31/2012	3,481
Fowler #7	6059	Licensed	11/29/1982	10/31/2002	900

Mill #6	3181	Exempt	09/17/1981	NA	1,000
Hailesboro #4	6058	Licensed	01/10/1983	12/31/2002	1,490
Mill #3	5633	Exempt	07/14/1982	NA	1,000
Natural Dam	2851	Licensed	04/13/1982	03/31/2012	1,020
Ogdensburg	9821	Licensed	06/15/1987	05/31/2027	3,675

Note:NA - Not applicable.

- a Newton Falls Project consists of two developments: (1) Upper and (2) Lower.
- b Oswegatchie River Project consists of six developments: (1) Browns Falls, (2) Flat Rock, (3) South Edwards, (4) Oswegatchie, (5) Heuvelton, and (6) Eel Weir. Heuvelton and Eel Weir developments are farther downstream, between Natural Dam and Ogdensburg Projects.

1. Geographic Scope

The geographic scope of the analysis defines the physical limits or boundaries of the proposed action's effects on the resources. Because the proposed actions would affect the resources differently, the geographic scope for each resource may vary.

In this case, for aquatic and recreational resources, the scope of our analysis encompasses the Oswegatchie River from the farthest upstream reach of the headpond of the Fowler #7 Project to the most downstream point of the tailwaters of the Hailesboro #4 Project, directly upstream of the Hailesboro #3 dam. In addition, we include the "Island Branch" of the Oswegatchie River in our analysis.

We chose this geographic scope for these resources because the effects of project operations are limited to this area and, in this case, project operations directly and indirectly affect these resources.

2. Temporal Scope

The temporal scope of our cumulative effects analysis in the EA includes past, present, and future actions and their effects on each resource that could be cumulatively affected. Based on the license terms, the temporal scope looks 30 years into the future, concentrating on the effect on the resources from reasonably foreseeable future actions. The historical discussion is, by necessity, limited to the amount of available information for each resource.

C. Environmental Analysis

1. Geology and Soils

a. Affected Environment:

Soils at the Hailesboro #4 Project are classified as Summerville-Rock outcrop complex, hilly and Summerville-Rock outcrop-Nehasne complex, rolling. These soils are generally well-drained, loamy soils formed in glacial till, and consisting of 30 to 40 percent of exposed bedrock, primarily granite. These two soils also occur in the Fowler #7 Project area, along with the Insula-Rock outcrop complex, rolling, which is a poorly drained, clayey soils formed in glacial lake sediments.

b. Environmental Effects:

The activities proposed by HDG would have no effect on the existing geology of the project sites. Potential effects on soils are associated with soil stability and concerns for erosion and sedimentation. The proposed canoe portage and put-in/take-out areas would involve land disturbing activities that could result in localized short-term increases in erosion and sedimentation near the river. Steep areas and areas cleared of vegetation are particularly susceptible to erosion.

HDG does not propose any measures to control the potential effects of erosion and sediment disturbance on water quality during construction associated with the implementation of the proposed environmental enhancement measures. NYSDEC's standard conditions contained in the WQC for each project specify that prior to commencing any activities that could adversely affect water quality, HDG receive NYSDEC approval of an ESCP.

Our Analysis

Implementation of the proposed environmental enhancements including installation of trashracks and downstream fish protection measures, streambed modifications, and the construction of recreational improvements could result in the temporary disturbance of existing soils.

Development and implementation of proper soil and erosion control measures, as specified by NYSDEC, would protect water quality in the Oswegatchie River from any increase in sedimentation during construction activities and the subsequent maintenance of the newly constructed facilities. Soil erosion and sedimentation would be minimized by appropriate erosion and sediment control practices.

Therefore, we recommend that, prior to commencement of any land-disturbing activities, HDG file with the Commission, for approval, a site-specific ESCP prepared in consultation with NYSDEC and the Natural Resources Conservation Service that provides details of the soil erosion and sedimentation controls that would be implemented to minimize soil erosion. Also, any site-specific ESCP should address the need for contaminant screening of sediments prior to any removal and disposal of

sediments.

c. Unavoidable Adverse Effects:

Construction of proposed recreational enhancements, including boat put-ins/take-outs and portage trails may result in minor, short-term increases in erosion and sedimentation. Implementation of approved site-specific ESCPs would minimize these impacts.

2. Water Resources

a. Affected Environment:

Water Quantity and Use

The headwaters of the Oswegatchie River originate in the mountainous Adirondack region of New York. The river flows 132 miles northward through St. Lawrence County to its confluence with the St. Lawrence River at Ogdensburg. The drainage area of the Oswegatchie River at the Hailesboro #4 and Fowler #7 Projects is approximately 658 square miles.

Table 2 shows the streamflow record for both projects calculated from the closest downstream U.S. Geological Survey (USGS) stream gage at Heuvelton, New York (No. 04263000). The drainage area at the Heuvelton gaging station is about 965 square miles. Flows for each project were prorated. Flows at the Hailesboro #4 Project were further adjusted by subtracting 30 cfs to account for normal Island Branch flow diversions. Average monthly flows at the Hailesboro #4 Project range from a high of 2,873 cfs in April to a low of 389 cfs in August. Similarly, average monthly flows at the Fowler #7 Project range from a high of 2,903 cfs in April to a low of 419 cfs in August.

Table 2. Average, minimum, and maximum daily discharges at USGS streamflow gage at Heuvelton, New York, on the Oswegatchie River.^a (Source: Staff)

Project	Average Daily Discharge (cfs)	Minimum Daily Discharge (cfs)	Maximum Daily Discharge (cfs)
Hailesboro #4	1,161	43	13,064
Fowler #7	1,191	73	13,094

a Period of record 1917 to 1997: USGS gaging station at Heuvelton (No. 04263000), located 21 miles downstream of the project.

Both projects are operated in a semi-automatic ROR mode with negligible net useable storage capacity. The projects are controlled using pond-level control at the Hailesboro #4 Project

and a float control at the Fowler #7 Project. The normal water surface elevation is 461 feet NGVD at Hailesboro #4 and 542 feet NGVD at Fowler #7. Under normal operating conditions, the water level of the impoundments does not vary more than a few inches. Impoundment elevation is maintained at or very near the top of the flashboards to allow overflow spillage within a reasonable period following a unit trip.

The crest elevations of Hailesboro dam #1 and dam #2 are essentially the same, as are the height of the flashboards. However, the flashboards on dam #1 are pneumatic rubber flashboards, and the crest elevation is controlled, so they theoretically never "fail." The flashboards on dam #2 are wooden and typically fail if the water level exceeds about 2 feet over the top of the flashboards, and, therefore, they would only fail during high-flow events when the inflow exceeds the hydraulic capacity of the powerhouse units.

The crest elevations of the Fowler dams #1, # 2, and #3 vary (dam #1 - elevation 541.2 feet, dam #2 - elevation 540.07 feet, dam #3 - elevation 540.63 feet). The top of the flashboards is approximately the same (dam #1 - elevation 542.03 feet, dam #2 - elevation 541.90 feet, and dam #3 - elevation 542.05 feet). HDG states that the flashboards on dams #2 and #3 tend to fail more often because they are higher than the boards on dam #1.

Seasonal decreases in impoundment levels may occur with flashboard failure, which typically occurs during high flows in January and February when there are also high levels of river ice. During a failure, impoundment levels may drop 1 to 2 feet, depending on the number and height of flashboards lost. Flashboards are recovered and replaced when the river is at a lower flow (less than the hydraulic capacity of the turbines) to allow safe reinstallation.

The Oswegatchie River has 17 hydroelectric developments along its length (see table 1). Currently, there are no known or proposed consumptive (industrial, steam electric, irrigation) users of the river within the Hailesboro #4 and Fowler #7 Project areas. However, the village of Gouverneur, which is located about 2.5 miles downstream from the Hailesboro #4 Project, withdraws water for its municipal water supply.

Water Quality

Water quality in the project reach is typical of Adirondack rivers and is characterized as brownish in color, mineral poor, and well oxygenated. NYSDEC designated the Oswegatchie River between Gouverneur and Talcville as Class A. Class A water use is suitable for drinking water supply, culinary or food processing purposes, primary and secondary contact recreation, and fishing. Class A waters are also suitable for fish propagation and survival. The water quality standards for this classification include a pH range between 6.5 and 8.5; dissolved

oxygen of 5 milligrams per liter (mg/L) (minimum daily average) that at no time shall be less than 4 mg/L; and dissolved solids, odor, color, and turbidity concentrations that do not adversely affect or impair the waters for their best usage.

Available water quality data indicate that the project waters are in compliance with state water quality standards. The project's shallow impoundment likely reduces the potential for oxygen depletion during low-flow, high-temperature periods. Even at the minimum recorded flow at each project, each impoundment turns over more than four times in one day; therefore, water has little time to stagnate. The numerous gorges, falls, boulders, and cobble riffles also ensure adequate aeration throughout the river reaches.

Currently, water quality problems in the basin are dominated by two primary issues: contamination as evidenced by fish consumption advisories (particularly advisories for the St. Lawrence River) and atmospheric deposition/acid precipitation. These two problems account for more than 95 percent of the most severe water-use impairments in the basin (NYSDEC, 2000).

Overall water quality in the Oswegatchie River has improved since the 1970's as a result of reduced point-source discharges into the river of industrial origin and construction of pollution control facilities. The applicant is not aware of any discharges directly upstream of the project area that could affect water quality.

b. Environmental Effects:

Although the project operating mode and associated impoundment fluctuations and bypassed reach flows relate to water quality, the effects pertain mostly to fisheries and other aquatic biota. We therefore discuss these effects in section IV.C.3.b, Aquatic Resources. In this section, we discuss the potential effects of proposed operations on water quantity and measures proposed or recommended for monitoring compliance with the proposed and recommended operations.

Impoundment Fluctuations as Related to Providing Continuous Minimum Flows

HDG proposes to continue to maintain impoundment water levels at or very near the top of flashboards or at the crest of the dams when flashboards are not in place and to operate the projects to minimize impoundment fluctuations.

The NYSDEC recommends limiting impoundment drawdowns at both projects to less than 3 inches below the top of the flashboards or the crest of the dams when flashboards are not in place and allows for temporary modification due to emergencies or for short periods upon agreement with NYSDEC.

Interior recommends maintaining the impoundment water levels at the top of the flashboards or crest of dam when flashboards are not in place to ensure that spillage would occur instantaneously if the units go offline for any reason.

Our Analysis

NYSDEC's 3-inch drawdown limitation essentially reflects HDG's current project operations and is consistent with NYSDEC conditions that have been placed on most small hydroelectric plants in New York State in the recent past. Interior's recommendation to maintain impoundment water levels at the top of the flashboards or crest of the dams when flashboards are not in place is intended to ensure continuous minimum flows into the bypassed reaches during power outages.

Hailesboro #4 Project

At the Hailesboro #4 Project, HDG would maintain 8 cfs below dam #2 via leakage and 20 cfs below dam #1 through the sluice gate in the forebay canal. An instantaneous flow of 8 cfs would be ensured downstream of dam #2 with flashboards in place or out because this amount is provided by dam leakage flows. Therefore, failure of flashboards at dam #2 would not affect the minimum flow below dam #2 because the proposed flow is equivalent to the existing leakage. HDG proposes to provide its proposed minimum flow below dam #1 through a sluice gate in the wall of the forebay canal. This sluice gate appears to be at least 3 inches below the crest of the dam. With the flashboards on dam #2 and pneumatic crest gate on dam #1 at their normal elevation of 461 feet NGVD, which typically would be the case from spring through late winter, a continuous minimum flow could be provided through the sluice gate even if one or both units were to trip off.

If the minimum flow is not provided through the sluice gate and the pneumatic crest gate were at its lowest level, we calculate that it would take only 1 to 2.5 minutes for water to reach the crest of the dam if both units were to go off when the impoundment water level is 3 inches below the dam crest. In section IV.C.3, Aquatic Resources, we conclude that a brief disruption in the minimum flow would not affect fisheries in the bypassed reach because of existing leakage and pool habitat. However, we would expect that HDG would be able to provide the continuous minimum flow during a unit shut down while operating within the 3-inch impoundment limitation.

Therefore, we agree with NYSDEC that limiting impoundment fluctuations to within 3 inches of the top of flashboards or crest of the dams when flashboards are not in place would be reasonable. We conclude that continued operation of the impoundments in this manner would comply with ROR operation and would not have any adverse effect on water quantity in either the impoundment or downstream reach.

Fowler #7 Project

At Fowler #7, HDG proposes to provide 16.5 cfs to the reach below dam #3 through a notch in the flashboards on dam #3. HDG indicates that this release opening in the flashboards would be full depth and as wide as required to maintain a minimum flow of 16.5 cfs in the channel at the lowest pond elevation expected during normal operations. HDG could size the notch to ensure a continuous minimum flow below dam #3, as recommended by Interior, when all the flashboards are in place and when water levels are 3 inches below the top of the flashboards. Therefore, we conclude that HDG would not need to maintain the impoundment water level at the top of the flashboards to ensure a continuous minimum flow to the reach below dam #3 when the flashboards are in place.

The only circumstance in which we could envision a problem with providing the continuous minimum flow to the reach below dam #3 following the shut down of one or both units at Fowler #7 would be if all of the flashboards were not in place or if flashboards at either dam #1 or dam #2 were not in place. This potential problem could result because dam #3 is higher than dam #2. If the flashboards on all the dams or on dam #2 were not in place, water could spill over dam #2 without providing the recommended minimum flow below dam #3. However, flashboard failure typically occurs in January and February, and the flashboards are replaced as soon as it is safe to do so in the early spring. Flows would be expected to exceed the hydraulic capacity of the project during these months and we would expect that there would be enough spill over all the dams to meet the minimum flow requirements below dam #3.

Neither NYSDEC nor Interior have recommended any measures that would restrict HDG's ability to replace the flashboards. HDG indicates that flashboard replacement typically requires a drawdown and takes about 1 day. During this limited period, HDG would not be able to provide a continuous minimum flow below dam #3, except for the 4 cfs of existing leakage from the dam. In section IV.C.3, Aquatic Resources, we conclude that a brief disruption in the minimum flow would not affect fisheries in the bypassed reach because of existing leakage and pool habitat.

We agree with NYSDEC that limiting impoundment fluctuations to within 3 inches of the top of flashboards or crest of the dams when flashboards are not in place would be reasonable, would comply with ROR operation, and would allow HDG to provide a continuous minimum flow below dam #3 during all but the brief time required to replace flashboards in the spring.

Flow, Water Level, and Water Temperature Monitoring

HDG manually records impoundment water levels using existing staff gages and water level indicators located upstream and downstream of the project dams. HDG also maintains staff gages

in each project tailwater and records water levels at the Hailesboro tailwater gage, but not in the Fowler tailwater.

NYSDEC specifies in the WQCs for both projects that HDG monitor flows and install permanent staff gages, or other visual markers, to determine headpond water surface elevations, tailwater flows, and flow through the bypassed reach. NYSDEC indicates that the staff gages that are visible to the public be installed to allow for independent verification of water surface elevations.

Interior recommends that HDG develop a flow monitoring plan in consultation with the NYSDEC and FWS within 6 months of license issuance that includes procedures for determining headpond and tailwater elevations and all project flows (turbines, gates, weirs, bypasses). The initiation and termination of flows designed to enhance walleye spawning depends upon the prevailing water temperature. Therefore, Interior also recommends that HDG include the procedures and location of water temperature measurement at the Hailesboro # 4 Project in its monitoring plan.

Our Analysis

Discussions and observations during our October 11, 2001, site visit indicate that instrumentation to monitor water levels is already in place. The installation of staff gages at publicly accessible locations, as recommended by NYSDEC and Interior, would enable independent verification of water levels in the headpond and the tailwater, which would provide a general measure of ROR operations at the projects. HDG has commented that they are in the process of recalibrating the headpond gages to match the survey data collected at the dam to ensure correlation with the top of the crest gates. This effort, though needed, is only an initial step in the development of a monitoring program that ensures compliance with recommended impoundment fluctuation limitations and minimum flows.

We agree with the NYSDEC and FWS that monitoring water elevations and minimum flow releases is warranted to ensure compliance with license conditions at both projects. An operations compliance plan that includes, at a minimum, provisions for measuring and documenting headpond and tailwater elevations and downstream flows, including flows to the bypassed reaches and providing documentation of data to the resource agencies and the Commission, would enable the Commission and the agencies to verify compliance with license conditions. This plan should define the criteria by which compliance with ROR operations would be measured, specify the type and location of instrumentation that would be used to monitor the recommended flow regime in the bypassed reaches and downstream of the projects at both projects, specify the location of temperature monitoring at the Hailesboro #4 Project, and identify the data collection intervals and reporting procedures.

HDG indicates that it cannot provide the additional 77 cfs below the Hailesboro #4 Project during walleye spawning season through the trash sluice gate because the gate is not big enough. HDG expects to provide the additional flow over the spillway, but states that it has not made a final determination on how to provide these additional flows. Therefore, HDG would need to explain in the operations compliance plan how these additional flows would be provided. We also would expect HDG to confirm our assumptions about the capacity of the sluice gate to provide a continuous minimum flow during any shut down of units. At the Fowler #7 Project, HDG would need to verify our assumptions about the sequence and seasonality of flashboard failures relative to provision of continuous minimum flows downstream of dam #3.

The operations compliance plan should be filed with the Commission for approval. Because the development and implementation of the operations compliance plan would affect the project economics, we provide our final recommendation in section VI, Comprehensive Development and Recommended Alternative.

c. Unavoidable Adverse Effects: None.

3. Aquatic Resources

a. Affected Environment:

The fishery in the project vicinity of the Oswegatchie River consists of a mix of warm and coolwater species. Carlson (1992) conducted a comprehensive fish survey of the Oswegatchie River between Gouverneur and Cranberry Lake in 1991. In samples collected at river miles (RM) 63, 64, 65, and 66 (from downstream of Hailesboro #4 to upstream of Fowler #7), rock bass, smallmouth bass, and white sucker occurred most frequently, with rock bass being three times more abundant than either smallmouth bass or white sucker. Rock bass, smallmouth bass, and fallfish were the only species collected at all locations along this stretch of river. The greatest number of fish and species were collected at RM 63 near the confluence of the Middle and Island Branches downstream of the Hailesboro #4 Project.

In the Island Branch, Williams (1985) found self-sustaining populations of rock bass and smallmouth bass as well as a variety of forage species. Walleye and northern pike were also found in the downstream portion of this reach. Dating back to 1931 and encompassing four different fishery surveys, there are no records of any anadromous or catadromous fish species inhabiting the Oswegatchie River between Gouverneur and Cranberry Lake (Carlson, 1992).

The Hailesboro #4 Project has a 2-acre impoundment and a bypassed reach known as the Middle Branch that extends from the dam to the backwater of a dam downstream in the village of Gouverneur. The Middle Branch consists of 2 channels below dams

#1 and #2 that join approximately 300 feet below dam #1. Water collects in a small plunge pool below dam #1 and then passes through a bedrock gorge that is non-vegetated with steep banks. Below dam #2, water collects in a shallow pool then passes through a 40-foot-long cobble riffle section before passing over several vertical drops and converging with the flows from dam #1. The combined flow then continues approximately 1,200 feet farther before entering the upstream end of the impoundment for the dam in the village of Gouverneur. Downstream of the confluence, there is no pool habitat as the reach levels out and widens. The river bed is primarily bedrock with some cobble and boulders strewn throughout the channel. Because of the rugged nature of the bypassed reach, Williams (1985) concluded that it contained no fishery habitat of importance, except possibly walleye spawning grounds at the very downstream end of the reach. Currently, there are no minimum flow requirements for the bypassed reach, and HDG estimates leakage to be 5 to 10 cfs at both dams #1 and #2.

Discharges from the project pass through a short excavated tailrace channel into the 6.5-acre headpond of the next downstream dam, Hailesboro #3.

The Island Branch begins approximately 1 mile downstream of the Hailesboro #4 Project. It is 4.5 miles long with steep banks and consists of a number of pools with riffles or falls below them. The riffle areas below the pools consist of large cobbles while the substrates in the pools are primarily sand and silt, with areas of gravel and cobbles (Williams, 1985). Water levels in the pools are controlled by rock ledges at the downstream end of each pool so that even if flows were low or stopped for a short period, the pools would maintain their water levels (Williams, 1985). Currently, HDG maintains 30 cfs of flow to the Island Branch through a notched weir at the Island Branch diversion dam.

The Fowler #7 Project has a 3-acre impoundment and 3 bypassed reaches. Beginning approximately 0.2 mile upstream of the project and continuing up to the Emeryville dam, the riverbed substrate is sand and silt (Carlson, 1992). The reach below dam #3 is approximately 1,100 feet long and is primarily an overflow channel that would normally only be wetted under high river flows. Under low-flow conditions (leakage), the reach consists of a small plunge pool, several short (200- to 300-foot-long) riffle runs and a large (approximately 200-feet-wide by 300-foot-long) pool before converging with flows from dams #2 and #1, and the project tailrace. Substrates in the riffle areas consist of bedrock and boulder with small amounts of cobble while the large pool consists of bedrock covered by a thin layer of silt. The substrate in the area where the three reaches converge is primarily bedrock and boulders. The reaches below dams #2 and #1 are each about 100 feet long and are partially backwatered from the downstream impoundment, tailrace, and bypassed flows below dam #3. Currently, there are no minimum flow requirements for

the bypassed reaches; however, spillage over all three dams occurs about 52 percent of the time on an annual basis.

b. Environmental Effects:

Minimum Flows

Currently, there are no minimum flow release requirements for the Hailesboro #4 and Fowler #7 bypassed reaches. When flows do not exceed project capacity at the Hailesboro #4 Project (56 percent of the time on an annual basis), the channels below dams #1 and #2 receive only leakage, which is estimated to be 5 to 10 cfs from each dam. When flows do not exceed project capacity at the Fowler #7 Project (48 percent of the time on an annual basis), the reaches below dams #3 and #2 receive only leakage, which is approximately 4 cfs from each dam, while leakage below dam #1 is minimal.

The Island Branch diversion dam and weir are not part of the existing Hailesboro #4 Project. There is also no minimum flow required by FERC for the Island Branch of the Oswegatchie River; however, HDG has maintained a minimum flow of 30 cfs to the Island Branch since 1985. The flow-control diversion dam and weir, placed at the outlet from the Hailesboro #6 Mill impoundment, was constructed in 1985 to improve the distribution of flows to the main stem of the Oswegatchie River for energy production while stabilizing the flow to the Island Branch. The 30 cfs of flow was recommended and agreed upon during the New York State permitting process based on a flow study conducted in 1983 and described in a 1985 study report (Report On Maintenance Flows for the Oswegatchie River at Hailesboro, New York, March 6, 1985).

HDG proposes to continue operating the Hailesboro #4 Project as a ROR project and provide a year-round minimum flow release of 28 cfs to the Middle Branch of the Oswegatchie River comprising primary flow of 20 cfs from an existing sluice gate at dam #1 and 8 cfs (leakage) from dam #2. In addition, HDG has agreed to provide an additional 77 cfs during the walleye spawning season (April 1 to June 10) in the Middle Branch of the Oswegatchie River when the combined natural river overflow and minimum release is below 105 cfs.

HDG proposes to continue operating the Fowler #7 Project as a ROR project and provide a year-round minimum flow release of 16.5 cfs to the bypassed reach below dam #3. HDG also proposes to continue to maintain a minimum flow of 30 cfs in the Island Branch of the Oswegatchie River.

HDG reached an agreement with the NYSDEC and FWS on year-round minimum flows necessary to protect the fisheries and aquatic resources at the Hailesboro #4 and Fowler #7 Projects. Accordingly, the proposed minimum flow releases to the bypassed reaches are consistent with the conditions in the WQCs and with

Interior's Section 10(j) recommendations, except that Interior's recommended minimum flow of 25 cfs to the Island Branch of the Oswegatchie River is 5 cfs less than HDG's current release of 30 cfs.

NYRU, AR, AW and NHI recommend a year-round minimum flow release of 100 cfs at each project.

Our Analysis

Hailesboro #4 Project

HDG, FWS and NYSDEC conducted a flow demonstration study to determine an appropriate minimum flow for the bypassed reaches. During the study, flows were discharged at dam #1 through an existing sluice gate near the trash racks. A flow of 20 cfs from the gate combined with the existing leakage of 8 cfs below dam #2 was examined and determined to be sufficient, except during walleye spawning season when NYSDEC and Interior determined minimum flows of 105 cfs would be necessary.

The habitat quality of the bypassed reach is poor based upon our review of HDG's report on maintenance flows (Williams, 1985), NYSDEC's fisheries management survey (Carlson, 1992), and our observations during an October 11, 2001, site visit. The predominant bedrock substrate and rugged nature of the bypassed reach would not provide optimal habitat for resident riverine fish populations even if watered. However, increasing flows to 28 cfs in the reach would increase the macroinvertebrate production, which would enhance the forage base for the downstream fishery. The proposed 20 cfs of flow released through the existing sluice gate at dam #1 would also provide adequate passage for fish moving downstream of the project (see Downstream Fish Protection/Passage below).

Walleye are present downstream of the Hailesboro #4 Project, and the downstream section of the bypassed reach contains substrate habitat suitable for walleye spawning (Williams, 1985; Carlson, 1992). In rivers, walleye spawn in riffle areas with rocky or gravelly substrates and sufficient current to aerate the eggs and to prevent silting over them. Spawning generally occurs after ice out when temperatures reach 4 to 10 degrees C. The proposed minimum flow release of 105 cfs during the walleye spawning season falls within the walleye's preferred range of water currents for spawning (Geiling, 1995) and would provide adequate habitat in the lower section of the bypassed reach to support walleye spawning. However, because of inter-annual differences in river water temperatures, HDG's proposed time frame for releasing the minimum flow may not always encompass the entire walleye spawning season.

We conclude that the proposed minimum flow release of 28 cfs, 20 cfs through the existing sluice gate at dam #1 and 8 cfs (leakage) from dam #2, would provide sufficient flow to

adequately protect the limited aquatic habitat in the bypassed reach. We also conclude that the proposed minimum flow of 105 cfs during the walleye spawning season would be sufficient to provide adequate walleye spawning habitat in the lower section of the bypassed reach. However, because HDG's proposed time frame for this release may not always encompass the entire walleye spawning season on an annual basis, we recommend that the 105 cfs flow be released based upon the NYSDEC's defined spawning season, which is defined as beginning when water temperatures reach 4 degrees C for 4 consecutive days after March 15 and continuing until 30 days after water temperatures reach 10 degrees C. Accordingly, any operations compliance plan should include a provision for measuring water temperatures for the purpose of establishing the walleye spawning season.

Island Branch

The fishery resources (e.g., rock bass, smallmouth bass and various forage species) in the Island Branch are primarily confined to the pools and are self-sustaining populations as evidenced by the presence of young-of-the-year fish in each of the pools (Williams, 1985). The water level in these pools is controlled by rock ledges at the downstream end of each pool, and thus even under low-flow conditions maintain their water level (Williams, 1985). Because of the almost vertical rise of the river banks, the wetted area of the Island Branch varies little with increased flow, and at 30-40 cfs of flow, the river bed is full or nearly full along the entire stretch of the Island Branch (Williams, 1985). Thus, increasing the minimum flow to more than 30 cfs would not substantially increase the available fish habitat other than to increase the depth of the pools. The diversion dam benefits aquatic resources by stabilizing the low summer flows in the Island Branch. Before the diversion dam was built, summer flows through Island Branch were quite variable, ranging from flows that barely wet the streambed in the steeper gradients, to upwards of 150 cfs for short periods. With the diversion dam in place, typical flows now range from 30 cfs to 40 cfs. In addition, the diversion dam benefits downstream hydropower projects during high flows, directing more water down the main channel of the Oswegatchie River.

We conclude that continuing to provide the current minimum flow of 30 cfs to the Island Branch would adequately maintain the sport fishery and the forage base upon which it depends.

Fowler #7 Project

HDG, FWS and NYSDEC conducted a flow demonstration study to determine an appropriate minimum flow for the bypassed reaches. Flows ranging from leakage (4 cfs) up to 22 cfs were viewed and a year-round minimum flow release of 16.5 cfs to be released in the reach below dam #3 was agreed upon. In addition, it was agreed that no additional minimum flow requirements were needed for the reaches below dams #1 and #2.

The habitat quality of the bypassed reaches below dams #1 and #2 is poor based on our review of NYSDEC's fisheries management survey (Carlson, 1992) and our observations during an October 11, 2001, site visit. The reaches below dams #1 and #2 are slightly backwatered by the tailrace, downstream impoundment, and the discharges from dam #3. Given the predominant bedrock substrate and the short length of these reaches (100 feet each), additional minimum flows would not significantly increase the optimal habitat available for the resident riverine fish or macroinvertebrate populations.

The reach below dam #3 is the longest (approximately 1,100 feet), consists primarily of bedrock and boulders with some cobble and contains a fairly large (200-foot by 300-foot) pool and several riffle areas. Many of the fish species inhabiting the Oswegatchie River prefer softer substrates with more vegetative cover; however, several species, including the small-mouth bass, prefer harder bottom substrates with rocks and gravel and slow to moderate currents (Scott and Crossman, 1973; Smith, 1985). Although the reach below dam #3 does not provide optimal habitat for most of the Oswegatchie's fish species, moderately increasing flows to this reach would enhance the habitat for small-mouth bass and the macroinvertebrate population.

We concur with the resource agencies and conclude that no additional minimum flows are needed below dams #1 and #2 as they would not significantly enhance the aquatic habitat in these reaches. We also concur with the 16.5 cfs flow to be released below dam #3 proposed by HDG and recommended by the agencies. This minimum release would provide sufficient flow to enhance and adequately protect the limited aquatic habitat available in the bypassed reach.

Impoundment Levels

The Hailesboro #4 and Fowler #7 Projects currently operate in a ROR mode and would continue to be operated in a ROR mode. Fowler #7 Project dams have wooden flashboards with heights of 10 inches, 22 inches, and 17 inches at dams #1, #2, and #3, respectively. The Hailesboro #4 Project has a 2-foot-high Obermeyer pneumatic crest gate on dam #1. Dam #2 has 2-foot-high wooden flashboards supported by steel pins.

The WQCs require that the impoundments not be drawn down more than 3 inches below the top of the flashboards or top of the dam crest when flashboards are not in place. By letter dated March 29, 2002, Interior recommended that the licensee shall maintain the impoundments at the top of the flashboards (or at dam crest when the flashboards are off) to ensure that spillage will instantaneously occur should the units go offline for any reason. On August 12, 2002 FERC staff held a 10(j) meeting with

Interior to address this recommendation, and agreement was reached. By letter dated August 27, 2002, Interior agreed with FERC staff's proposal to ensure instantaneous spillage when the units go off line.

Our Analysis

At the Fowler #7 Project, the crest of the dams are at different permanent crest elevations, 541.2 feet NGVD at dam #1, 540.07 feet NGVD at dam # 2, and 540.63 feet NGVD at dam #3. The crest of the flashboards at these dams is about 542 feet NGVD. Because of these variations in the permanent crest elevations, HDG may not always be able to provide a continuous minimum flow downstream of dam #3 when all the flashboards are out, or when flashboards on dam #1 or dam #2, but not dam # 3, are out.

Fluctuations in impoundment water levels can adversely affect fish populations by reducing shoreline spawning habitat, causing nest abandonment and exposure, desiccating eggs and stranding young fish. Centrarchids (e.g., sunfish and bass) are particularly susceptible to water level fluctuations because they spawn primarily in the shallow littoral zone.

Currently, at the projects, there are seasonal decreases in impoundment water levels when the flashboards fail. At both projects flashboard failures typically occur in January and February during periods of high flow when there are also high levels of river ice. The flashboards are not replaced until flows subside enough to safely reinstall them. Depending upon the circumstances of the failure, impoundment levels may drop from 1 to 2 feet during failure. However, during the winter, few fish in the impoundments would be expected to inhabit water depths shallow enough to be affected by these decreases. Similarly, macroinvertebrates would typically overwinter in deeper water and, therefore, would not likely be subject to exposure due to flashboard failure.

Centrarchids typically spawn from mid-May through June depending on water temperature, with pumpkinseed and other centrarchids spawning later than smallmouth bass, and build their nests throughout a fairly wide range of water depths (e.g., smallmouth bass nesting occurs in water 2 to 20 feet deep while pumpkinseed nesting occurs in shallower waters generally 6 to 12 inches deep [Scott and Crossman, 1973]). Therefore, if flashboards are reinstalled before early May, there should be no effect on the impoundment fisheries as reinstallation would occur before centrarchid nesting begins.

If flashboards are not reinstalled by early May, the additional drawdown associated with the reinstallation would further lower the impoundment level during the centrarchid spawning season, potentially reducing nesting success. However, it is expected that few centrarchid nests would exist in the shallower, near-shore waters of the impoundments because the impoundments are relatively small with hard bottom substrates and

steep banks, making the near-shore waters less than optimal for nest building. A similar conclusion was arrived at for the Varick development on the Oswego River. In responding to the Commission staff's recommendation to install pneumatic crest gates to eliminate the decreases and increases in the impoundment water level associated with flashboard failure and reinstallation, the NYSDEC commented that it did "...not believe that installation of pneumatic crest gates at Varick will have as significant a biological benefit as at other facilities on the river because of the relatively small, steep sided impoundment." As a result, the rationale for recommending pneumatic crest gates at the Varick development shifted away from potential ecological benefits (FERC, 2000). For these reasons, we conclude that seasonal impoundment fluctuations caused by the loss of flashboards at the Hailesboro #4 and Fowler #7 Projects would not likely effect fish or macrobenthic communities in their respective impoundments.

Operating the projects in a ROR mode not only protects fish species in the project impoundments but also protects the downstream aquatic resources from the effects of frequent fluctuations in water levels. Currently, impoundment water levels are maintained at or very near the crest of the flashboards to allow overflow spillage to occur within a reasonable period following a unit trip. Based upon our calculations (see section IV.C.2, Water Resources), it would take 1 to 2.5 minutes at the Hailesboro #4 Project and 2.5 to 5.5 minutes at the Fowler #7 Project for spillage to occur after a unit trips offline if the impoundments are maintained within 3 inches of the top of the flashboards or crest of the dam if the flashboards are not in place. As long as minimum flows are maintained under normal operations, we would not expect these temporary departures from ROR operations to adversely affect the aquatic resources downstream of the projects. We conclude that operating the projects in a ROR mode and limiting the daily impoundment fluctuations to less than 3 inches as specified in the WQCs would minimize any potential effects on the aquatic resources.

When one or more units shut down, HDG should be able to provide minimum flows nearly instantaneously downstream of the projects when operating within 3-inch drawdown limitation. At the Hailesboro #4 Project, the flow downstream of both dams would be provided through the use of the sluice gate, whether flashboards are in or out. At the Fowler #7 Project, the flow downstream of dam #3 would be provided via a notch in the flashboards on dam #3, when all flashboards are in. In both circumstances, HDG would not need to maintain water levels exactly at the top of the flashboards in order to provide a continuous minimum flow when the flashboards are in.

Regardless, strict compliance with Interior's recommendation would require that the permanent dam crest elevations at one or more of the dams for the Fowler #7 Project be modified to uniform

crest elevations. We believe such large scale modifications of the dam crests are unwarranted and would provide little or no benefit to aquatic resources. Our calculations show it would take 2.5 to 5.5 minutes for spillage to occur at the Fowler # 7 Project after the units are tripped offline, if the impoundment is maintained within 3 inches of the top of the flashboards or crest of the dam if the flashboards are not in place. In addition, this scenario is only likely to occur during the months of January and February, which are not critical months for the target fisheries resources.

We conclude, flashboard failure would generally occur in the winter months when flows are high, and not during the critical life stages of the targeted fish species (i.e. late spring when the flashboards would be in place). With the existing leakage and pool habitat, a brief disruption of the recommended minimum flows would not affect targeted fisheries resources downstream of the dam #3 at the Fowler # 7 Project.

Upstream Fish Passage

No upstream fish passage facilities are currently provided at the Hailesboro #4 and Fowler #7 Projects. Additionally, several dams and various natural falls exist along the Oswegatchie River and the Island Branch downstream of the projects prohibiting upstream fish passage. No resource agencies request that upstream fish passage be provided at these projects. Interior requests a reservation of authority to prescribe upstream fish passage if deemed necessary in the future. NYRU, AR, AW and NHI recommend that HDG establish a mitigation fund in the amount of \$100,000 or in the alternative that Interior reserves its authority to prescribe fishways "...in order to assure that these projects contribute to the restoration of American eel and other native fisheries consistent with comprehensive plans that may be adopted or implemented...over the course of the new licenses."

Our Analysis

Dating back to 1931 and encompassing four different fishery surveys, there are no records of any anadromous or catadromous fish species inhabiting the Oswegatchie River between Gouverneur and Cranberry Lake (Carlson, 1992). Given the fish community (no anadromous or catadromous species) within the project area and the human-made and natural barriers to upstream fish passage downstream of the projects, there is no need to recommend upstream fish passage at the Hailesboro #4 or Fowler #7 Projects.

However, we recommend including in any license issued for these projects an article reserving authority for Interior to prescribe upstream fish passage facilities.

Downstream Fish Protection/Passage

HDG currently does not provide downstream fish passage at the Hailesboro #4 or Fowler #7 Projects. Currently, the only downstream passage routes for fish at these sites are through the turbines or via spillage over the dams when river flows exceed the hydraulic capacity of the turbines (spillage occurs on an annual average approximately 44 percent and 52 percent of the time at Hailesboro #4 and Fowler #7, respectively). Protection from entrainment for each project currently consists of trashracks with 1.75- inch clear spacing.

Prior to the issuance of the WQCs (issued 12/21/01) and Interior's Section 10(j) recommendations, HDG reached an agreement with the NYSDEC and FWS on downstream fish passage and protection measures at the Hailesboro #4 and Fowler #7 Projects. Accordingly, the proposed downstream fish passage and protection measures are consistent with the conditions in the WQCs and with Interior's Section 10(j) recommendations.

On December 12, 2000, HDG met with FWS, NYSDEC, and Barnes-Williams Environmental Consultants, LLC (BWEC; now P.A.C.E Environmental Services) to reach a consensus on downstream fish protection and passage issues at the two projects. With regard to trash rack spacing, FWS recommended the use of 1-inch-clear-spaced trashracks. HDG was unwilling to convert to 1-inch-clear-spaced trash racks due to site-specific concerns with icing and debris loads. However, an agreement was reached whereas the trash rack spacing would remain as is until the existing racks reach the end of their service life. At that time, HDG would consult with FWS and NYSDEC regarding the need for 1-inch-clear-spaced trashracks based upon river management objectives and other project conditions on the river.

At the Hailesboro #4 Project, the parties also agreed that HDG would discharge a minimum flow of 20 cfs from the existing sluice gate adjacent to the intake. HDG would consult with FWS in making structural modifications to the sluice gate to allow the discharge to fall directly into the plunge pool to minimize injury to any fish moving downstream via the 20-cfs minimum flow. At the Fowler #7 Project, a consensus was reached that the project design does not provide a location in proximity to the intake that could be used to effectively pass fish downstream of the project. However, Interior believes that the bypass sluice that would be used to provide the minimum flow below dam #3 will provide an adequate alternative means for passing fish below the project.

Our Analysis

Replacing or modifying trashracks can be extremely expensive and the effectiveness of 1-inch-clear-spaced, angled trashracks has not been conclusively demonstrated for warmwater and coolwater species. Studies conducted at the Upper Greenwich Project, on the Batten Kill River in New York, found that for resident fish (primarily bullhead, rock bass, and sunfish

species) 69 percent of the fish moved downstream through the turbines despite installation of angled trashracks designed to meet Interior's specifications (ERC, 1996, as cited in FERC, 2001).

The existing trashracks with 1.75-inch clear spacing are similar to those in many of the studies that EPRI reviewed in 1992 (concluding that most fish entrained are less than 200 mm [approximately 8 inches] in length) and should preclude entrainment of many larger fish. The estimated maximum water velocity at the trashracks is 0.89 fps and 1.64 fps at Hailesboro #4 and Fowler #7 Projects, respectively. With these velocities, most fish should have sufficient burst speed to swim upstream against the prevailing flow and to avoid entrainment (actual burst speeds of individual fish depend on the species and the size of the fish).

At the Hailesboro #4 Project, fish avoiding entrainment should be able to easily locate the sluice gate that is in proximity to the intake. The agreed-upon minimum flow of 20 cfs through the sluice is greater than 2 percent of the project capacity and should provide adequate attraction flow. Modifying the sluice to allow the discharge to fall directly into the plunge pool would minimize the potential for injury to fish.

At the Fowler #7 Project, the design of the project precludes the design of an effective bypass structure that is in proximity to the location of the trashracks. As such, the effectiveness of angled trashracks would be minimized because fish would be guided back into the flow of the river and not toward a bypass facility, and due to the large separation distance, these fish would be unlikely to find the proposed opening in the flashboards at dam #3 (the opening would release the minimum flow of 16.5 cfs discussed above under Minimum Flows). However, because the proposed release sluice is upstream of the intake structure, fish moving downstream may encounter it prior to the intake and use it as a bypass facility.

We find the agreement between HDG and the resource agencies to leave the existing trashracks at both the Hailesboro #4 and Fowler #7 Projects in place until the end of their service life and investigate the need to replace them with 1-inch-clear-spaced trashracks at that time to be a reasonable approach. At the Hailesboro #4 Project, the modified sluice gate should adequately bypass fish downstream of the project, and at the Fowler #7 Project, the proposed minimum flow release sluice should provide an alternative means for moving fish downstream of the project. However, we recommend that HDG consult with FWS and NYSDEC in designing the Hailesboro #4 Project sluice gate modifications and the Fowler #7 Project minimum flow release sluice, consistent with their agreement, to make the bypasses "fish friendly" and submit the design modifications to the Commission for approval.

In addition, we recommend including in any license issued

for these projects an article reserving authority for Interior to prescribe downstream fish passage facilities. This would enable measures to be taken, as appropriate, if a management plan for American eels or other fish species is developed in the future.

c. Unavoidable Adverse Effects:

Some fluctuation in impoundment levels would still occasionally occur due to failure and re-installation of flashboards at both projects. Some entrainment and turbine mortality would still occur.

d. Cumulative Effects:

Continued operation of the projects in a ROR mode would protect the existing fisheries both upstream and downstream of the project. Provision of minimum flows to the bypassed reaches would increase fish habitat, including spawning grounds, and foster increased macroinvertebrate production, which would provide an enhancement to the downstream fish community. Providing additional fish bypass routes would reduce fish entrainment and any associated mortality, which would enhance the downstream fish community.

4. Terrestrial Resources

a. Affected Environment:

The Oswegatchie River flows through the Western Adirondack Hills subdivision of the Adirondack Upland landform, running generally to the northwest prior to draining into the St. Lawrence River. The terrestrial resources that the two projects affect are very similar because of their proximity to each other and the overall topographic and climatic conditions of the area.

Vegetative Resources

The vegetative resources associated with the Hailesboro #4 and Fowler #7 Project areas are very similar in nature. Trees commonly found in the project areas include birch, alder, cherry, beechwood, and some maple, oak, and white pine. Herbaceous cover species commonly occurring in the areas include poison ivy, cattails, Christmas fern, wild ginger, maiden-hair fern, bloodroot, wild leek, yellow violet, striped violet, and various sedges and grasses. The upstream and downstream riverbanks and the surrounding areas are more heavily wooded (primarily by a mix of conifers and northern hardwoods) upstream within the Fowler #7 Project area.

Wetland Resources

Hailesboro #4 Project

The areas upstream of the project impoundment and downstream

of the dams and the project spillway have steep riverbanks and the river channel consists of exposed, tiered layers of bedrock. There are no level areas, with any topsoil to speak of, close to the project. National Wetlands Inventory (NWI) wetlands identified in the project vicinity, upstream or downstream of the project impoundment, include riverine, lower, and upper perennial wetlands with unconsolidated bottoms. Lower perennial wetlands, as identified by the NWI classification system, are characterized by a low gradient and slow water velocity-this includes the majority of wetlands downstream of the Hailesboro #4 dams. Palustrine emergent, semi-permanently flooded wetlands occur downstream of the power plant, within the tailrace.

Fowler #7 Project

Two NWI designated wetlands occur near the Fowler #7 Project impoundment. Both are characterized as palustrine, scrub/shrub, broad-leaved deciduous, seasonal saturated wetlands. The wetlands occur along the shoreline approximately 0.5 mile upstream of the project. During the October 11, 2001, site visit, it was determined that the palustrine scrub/shrub wetlands consisting of alder edges, paperbirch, blueberry, and white pine, were not connected to the river. The areas are normally saturated in the spring due to winter snowmelt and spring rains.

Wildlife Resources

Wildlife species found in the area of the projects include white-tailed deer, muskrat, beaver, red and gray fox, raccoon, woodchuck, opossum, and skunk. Small mammals such as rabbit, red and gray squirrels, chipmunk, mice, and shrews are also found within the project area.

Avian species commonly observed in the area include robins, crows, redwing blackbirds, blue jays, purple grackle, partridge, pheasant, evening grosbeak, and chickadee. These species are found throughout the project vicinity. Numerous reptile and amphibian species can also be found around the vicinity of the project. Garter snakes, peepers, bull frogs, tree frogs, toads, and salamanders are common.

b. Environmental Effects:

Few of HDG's proposed operational, enhancement, and mitigation measures could affect terrestrial resources in the project areas. HDG proposes to continue to operate the Hailesboro #4 and Fowler #7 Projects as ROR projects. Failure of the wooden flashboards are expected to continue during the high-flow months of January and February at both projects. Proposed recreational enhancements to provide portage, boating, and angler access would require the clearing of vegetation (see section IV.C.6, Recreational Resources).

Interior recommends that HDG continue to use the pneumatic flashboard on Hailesboro #4 dam #1 throughout the term of any license issued for the project. Interior also recommends that HDG maintain reservoir levels at both projects at the top of the flashboards or crest of the dam when the flashboards are not in place to ensure that spillage will occur instantaneously if the units go offline for any reason.

Our Analysis

We would not expect seasonal flashboard failure or minor daily fluctuation within 3 inches of the top of the flashboards or crest of the dams at the Hailesboro #4 and Fowler #7 Project impoundments to have any significant effect on terrestrial resources along the perimeter of the impoundments. The steep banks and rocky substrate along the impoundments provide little habitat for terrestrial, wetland, and/or sensitive vegetative species and wildlife in the area so they should not be affected. Wetlands present upstream of the Fowler #7 Project have no hydrologic connection to the Oswegatchie River during normal flows and would, therefore, not be affected by flashboard failure.

c. Unavoidable Adverse Effects:

Vegetative clearing associated with the development of canoe portages would represent a minor, long-term unavoidable adverse impact.

5. Land Use and Aesthetic Resources

a. Affected Environment:

The area near each of the projects consists of a combination of undeveloped and residential land uses.

At the Hailesboro #4 Project, the land adjacent to the impoundment is a combination of residential and undeveloped lands. The area on the south side of the impoundment is residential with manicured lawns extending to the edge of the reservoir. The area on the north side of the impoundment is wooded and undeveloped. Immediately upstream of the dam and powerhouse, the shoreline of the impoundment is bordered by residential lands and the Chub Lake Road. Downstream of the dam and powerhouse, the land is undeveloped and wooded with the exception of one residence on the river right side of the reach below dam #2.

At the Fowler #7 Project, the land adjacent to the impoundment is generally undeveloped and wooded. However, there is one residence and an informal "picnic" site along the south side of the impoundment. Downstream of the project, the land is undeveloped and heavily wooded. The area along the shoreline of

the Oswegatchie River is steep and rugged.

b. Environmental Effects:

HDG proposes to continue the periodic clearing of debris from the property of Michael Wranesh, a landowner adjacent to the Hailesboro #4 Project. The debris generally accumulates in the spring due to high-water levels. Removal of debris from Mr. Wranesh's property would enable Mr. Wranesh to continue to enjoy his property. Staff concludes that the debris removal is warranted.

No parties propose any additional enhancements to modify the land use and aesthetic resources of the projects. The relicensing of the Hailesboro #4 and Fowler #7 Projects would not significantly affect the land use and aesthetic resources of the projects.

c. Unavoidable Adverse Effects: None.

6. Recreational Resources

a. Affected Environment:

This region of New York is sparsely populated and located on the western edge of the Adirondack Park. Recreational opportunities in the region generally consist of canoeing, motor boating, hunting, fishing and hiking during the spring summer and fall. In the winter, snowmobiling, snowshoeing, and cross-country skiing are the dominant activities.

Hailesboro #4 Project

The Hailesboro #4 Project's recreational features consist of a 2-acre impoundment and a bypassed reach known as the Middle Branch. There is no public access to the impoundment or the bypassed reach. Staff observed a set of Class II rapids immediately upstream of the impoundment. The Middle Branch consists of two branches that join after approximately 300 feet below the dams and converge with the Island Branch directly upstream of the Hailesboro #3 Mill Project. Staff observed the Middle Branch during the site visit on October 11, 2001. The 600-foot-long bypassed reach below dam #2 contains a steep 10-foot drop and passes under a natural bridge before joining the bypassed reach below dam #1. The bypassed reach below dam #1 is a narrow channel that could offer a short, very challenging rapid. Staff could not conduct an assessment of the classification of the rapid because of the water level. Staff observed that access to the reach below dam #1 would require crossing the intake canal to gain access to a steep put-in.

HDG maintains a log of fishing activities in the impoundment

and in the plant tailrace. From May 1999 to December 1999, HDG personnel logged two occasions of fishing activity at the Hailesboro #4 Project. It should be noted, however, that HDG indicated during the site visit that staff visit the project 2 to 3 times per day and the log is located in an area where only the tailrace is visible. Although the log should not be considered a scientific study of recreational use, it indicates that there is a low amount of use at the project.

Fowler # 7 Project

The Fowler #7 Project's recreational features consist of a 3-acre impoundment and the Oswegatchie River downstream of the powerhouse. There is no public access to the impoundment or the bypassed reaches. Staff observed an informal area along the shoreline of the impoundment with a picnic table that appeared to be used by the landowners or local residents. Staff observed a Class III rapid approximately 0.25 mile downstream of the project. The Adirondack Mountain Club (ADK) indicates in their March 30, 2001, letter that there is a second rapid within 0.5 mile downstream of the project. An access point on the Oswegatchie River is located approximately 5 miles upstream at the Emeryville Project.

HDG maintains a log of fishing activities in the impoundment and in the plant tailrace. From May 1999 to December 1999, HDG did not log any use at the Fowler #7 Project. It should be noted, however, that HDG indicated during the site visit that staff visit the project 2 to 3 times per day. Although the log should not be considered a scientific study of recreational use, it does indicate that there is a low amount of use at the project.

Staff also observed the Island Branch of the Oswegatchie during the site visit. There is virtually no public access to the Island Branch and the entrance to it is blocked by a diversion dam. There is an informal access site on the Island Branch immediately upstream of its confluence with the Middle Branch.

b. Environmental Effects:

The relicensing of the Hailesboro #4 and Fowler #7 Projects could significantly affect recreation resources in the vicinity of the projects.

Portage

HDG proposes to provide a small boat/canoe take-out upstream of the Fowler #7 Project (see figure 3) and signage directing boaters to a put-in downstream of the Hailesboro #3 Mill Project,

which is immediately downstream of the Hailesboro #4 Project.

ADK requested additional studies at the Hailesboro #4 Project to develop a canoe portage and suitable access for ending or beginning a canoe trip with nearby parking. The town of Fowler requests canoe portage at the Hailesboro #4 Project. In addition, AW, the town of Fowler, and ADK request portage at the Fowler #7 Project.

Our Analysis

In addition to HDG's proposed portage, staff considered portage at each of the four projects that effect recreational boating on this section of the mainstem of the Oswegatchie River, the Island Branch, and the Middle Branch. Our analysis included characteristics of the reaches, land available, probable usage, and safety.

HDG's proposed portage around the four projects on this stretch of the Oswegatchie River would provide a take-out for individuals who access the river at Emeryville and a put-in below the Hailesboro #3 Mill Project with directions along the road that runs parallel along the Oswegatchie River. This would allow through-canoeists a means to portage around the four projects. The proposed put-in would improve access below the Hailesboro #3 Mill Project. HDG does not mention vehicle parking at either location. Because of the length of the portage and the lack of sidewalks along the busy highways that need to be traversed, parking at each of the portage locations would enable recreationists to better use the proposed portage opportunities. We conclude that limited parking would be warranted. Because provision of parking at the portage locations could affect project economics, we make our final recommendations in section VI, Comprehensive Development and Recommended Alternative.

As discussed in the Boating Access section, staff recommend the development of upstream and downstream boat access at the Fowler #7 Project. This access would double as a portage option for canoeists that would like to portage the Fowler #7 dam to access the rapids below the dam.

Approximately 1 mile downstream of the Fowler #7 Project, the Island Branch breaks away from the main channel. The Island Branch diversion dam is located at the mouth of the Island Branch. The Island Branch potentially provides 3 1/2 miles of waters which boaters may use, however, the diversion dam is a barrier to recreationists. We considered the benefits of providing portage at the Island Branch diversion dam, and do not recommend portage for the following reasons.

The Island Branch does not provide boating waters safely navigated by canoes or kayak. The Island Branch diversion dam has a fixed notched weir that provides a consistent 30-cfs flow to the Island Branch. Flows of 30 to 40 cfs provide bank full

flows, however the waters are shallow, with many riffle and rapids areas not easily traversed by canoes or kayak. The land adjacent to the diversion dam is relatively flat and could be easily portaged. In such situations, where there is demand to access waters below dams, informal bankside portages and trails are typically evident. There is no indication of informal portage at the site, suggesting canoeists are not currently attempting to pass the diversion dam. Finally, HDG only holds an access easement for maintenance of the dam, and does not own the land adjacent to the diversion dam, making it difficult to provide a formal portage at the site.

The Hailesboro #6 Mill Project is an exempted project located on the main channel with no provisions for portage and is not a part of this proceeding. AWA has suggested that the reopener provision could be used to provide portage at this project. In this case, we disagree. The issue of the Commission's authority regarding reopeners for exemptions will be discussed in any order issuing license. Regardless, staff considered the possibility of portage at Hailesboro #6 and conclude portage around Hailesboro #6 is not warranted at this time. Portage opportunities are constrained by limited access and the terrain along the shoreline at the dam. Along the left side of the river looking downstream, the talc mill blocks potential portage routes. Along the right side of the river, the terrain is steep and portage options would be costly to provide.

Staff evaluated the need for portage at the Hailesboro #4 Project. There is no access to the Oswegatchie River between the Hailesboro #6 Mill Project and the downstream Hailesboro #4 Project impoundment. In addition, the Hailesboro #6 Mill dam blocks passage from upstream. Portage implies passage to continue traveling downstream. Given that there is no access from upstream, we conclude that portage and take-out provisions at Hailesboro #4 are not necessary. In addition, portage around Hailesboro #4 would provide limited benefit. Portage provisions around Hailesboro #4 would require a put-in either in the Middle Branch or into the headpond for Hailesboro #3. At the Middle Branch of the Oswegatchie River, access to the channel below dam #2 is not advisable because of the undercut rocks and natural bridge that would have varying levels of clearance below it depending on the water level. Access to the channel below dam #1 requires crossing the Hailesboro #4 intake canal. The canal has a bridge that is gated and locked to prevent unauthorized access. Because the powerplant is not staffed at all times, HDG staff would need to be contacted to provide access. Such access provisions would provide limited benefit, because the length of the reach is very short, approximately 1,000 feet. A second option for portage would be to access the tailrace and subsequently the headpond for Hailesboro #3. There is almost no free-flowing water between Hailesboro #4 and Hailesboro #3, and the two projects are very close together. Providing portage in this case would provide very little benefit to boaters.

The projects are located on the western edge of the Adirondacks. There are a variety of other options in the Adirondacks region for individuals who wish to paddle. It is not likely that portage provisions at the Hailesboro #6 Project, Island Branch diversion dam, and Hailesboro #4 Project would benefit more than a handful of individuals. We base this conclusion on the portage use at the Emeryville project, upstream of Fowler #7, which is estimated to be 2 percent of capacity in the most recent FERC Form 80, Recreation Report for that project. However, because there is a potential for increased recreation demand at the Hailesboro/Fowler Projects, HDG should monitor recreation use to determine the number of individuals using the portage and put-in, take-out facilities in the project area. This information may provide the support for recommending additional portage facilities as demand increases. Information collected and filed pursuant to the reporting requirements for FERC Form 80, Recreation Report, would be sufficient for such a monitoring program.

Boating Access

The town of Fowler requests access and an associated area with 2 or 3 picnic tables between the Hailesboro #3 Mill Project and the village of Gouverneur, and access and an associated area with 2 or 3 picnic tables between the Hailesboro #4 and Hailesboro #3 Mill Projects. The town of Fowler also requests access for small rowboats and canoes and a boat launch upstream of the Hailesboro #4 Project and downstream of the Hailesboro #6 Mill Project.

In addition, ADK and AW request an investigation of take-out and put-in opportunities at the Hailesboro #4 Project.

The town of Fowler requests access for small rowboats or canoes somewhere upstream of the Fowler #7 plant and below the Emeryville dam, an associated area large enough to accommodate 2 or 3 picnic tables, the installation of an access point for fishing, and a canoe portage downstream of the Fowler #7 Project and upriver of the Hailesboro #6 Mill Project. AW has expressed an interest in the whitewater downstream of the Fowler #7 Project.

AW requests that flow information at both projects be made available to the public.

Our Analysis

HDG proposes an access point below the Hailesboro #3 Project as the put-in for the proposed portage around the four projects in this area. Picnic tables in the area of the put-in would provide a benefit to recreationists and local citizens using the area. Staff concludes that the proposed access would provide a benefit to local recreationists and is warranted at this location.

The stretch of river between the Hailesboro #4 and Hailesboro #3 Mill Projects is very short. The Hailesboro #4 Project discharges directly into the Hailesboro #3 Mill headpond. Access to this area would be difficult and provide limited benefit. Therefore, we conclude that formal access and picnic tables are not warranted at this location.

At the Middle Branch of the Oswegatchie River, access to the channel below dam #2 is not advisable due to the undercut rocks and natural bridge that would have varying levels of clearance below it depending on the water level. Access to the channel below dam #1 requires crossing the Hailesboro #4 intake canal. The canal has a bridge that is gated and locked to prevent unauthorized access. Because the powerplant is not staffed at all times, HDG staff would need to be contacted to provide access. Such access provisions would provide limited benefit, because the length of the reach is approximately 1,000 feet. Therefore, we conclude that access below the Hailesboro #4 Project is not reasonable.

During the October 11, 2001, site visit, staff observed a potential access point along the Chub Lake Road immediately upstream of dam #2 at the Hailesboro #4 impoundment (see figure 2). Development of access at this point would provide access to the impoundment and to rapids at the upstream end of the impoundment. Additional parking could be provided at the Hailesboro #4 powerhouse. Individuals could then carry boats along the road to put-in. The access point along the Chub Lake Road would not be conducive to the inclusion of picnic tables due to the limited amount of land at the site. Staff concludes that such access would provide a benefit to local recreationists by providing access to the impoundment and to the rapids immediately upstream of the impoundment.

There are whitewater resources downstream of the Fowler #7 Project that could provide benefits to potential users. The provision of access downstream of the Fowler #7 Project would provide access to whitewater resources (see figure 3). Boaters wishing to use the whitewater resources would be required to move back upstream to the access through a combination of walking along the riverbank and paddling across pools. Such access is not uncommon and has come to be known as "park and play" access. Development of such access would require that HDG obtain easements from local landowners. Appropriate signage would provide users with the information that they need to use the resources in a safe manner. We conclude that access to the downstream reach of the Fowler #7 Project for recreational boating is warranted.

Recreationists wishing to access the rapids below the Fowler #7 Project would benefit from publicly accessible flow information, since various water levels would provide different experiences at the rapids. HDG could provide this information at

a low cost. We conclude that the provision of such information is warranted and should be addressed in a final recreation facilities plan.

Angler Access

HDG does not propose any recreational facilities directly associated with the Hailesboro #4 Project. HDG has indicated a willingness to work with the town of Fowler to provide bank fishing access along the shoreline of the Fowler #7 impoundment.

The FWS recommends that HDG provide free public access to all portions of the impoundments and riverine sections, including the bypassed reaches, within the limits of public safety and security of the projects.

Our Analysis

Because of the land ownership pattern, HDG would need to obtain easements from local landowners to provide angler access to the Fowler #7 impoundment. Bank access to the impoundment would provide a benefit to local anglers because access to local reservoirs is severely limited. In addition, the inclusion of picnic tables associated with this access would provide a benefit to local citizens wishing to enjoy the resources that the impoundment has to offer. Staff agrees with the town of Fowler that bank fishing and boat access is warranted at the Fowler #7 Project. HDG could combine the angler access with its proposed small boat/canoe portage take-out along the impoundment. Providing similar access to the downstream reach of the Fowler #7 Project would allow bank anglers access to this section of the Oswegatchie River. We find that bank access upstream and downstream of the Fowler #7 Project would be a reasonable enhancement measure to address recreational opportunities at the projects.

To address all of the boating and angler access issues, HDG should consult with AW, ADK, NYSDEC, the town of Fowler, and the town of Hailesboro to develop a recreation plan for boating and fishing that should include final plans for the canoe portage, car-top boat access, and angler access provisions outlined in this section. The plan should be filed with the Commission, for approval, within 1 year of license issuance.

c. Unavoidable Adverse Effects: None

d. Cumulative Effects:

Recreation on the Oswegatchie River is affected by the presence and operation of the four projects in this area. HDG's proposed portage route would enable recreationists to bypass all of these obstacles, but would continue to preclude the recreational use of nearly 5 miles of the river and the entirety of the Island Branch. Our additional staff-recommended measures

would providing additional access for boating and fishing at both projects and would result in a cumulative benefit to regional recreational opportunities.

7. Cultural Resources

a. Affected Environment:

Hailesboro #4 Project

There are no known above-ground or archaeological resources listed in or eligible for listing in the National Register of Historic Places (National Register) in the project's area of potential effect (APE). No traditional cultural properties have been identified within the project's APE.

The SHPO reviewed the proposed action and determined that the relicensing of this minor project would have no effect on the cultural resources in or eligible for listing in the National Register (letter to K. Webb, CHI, Andover, MA, from R. Pierpont, Director, Historic Preservation Field Services Bureau, Waterford, NY, dated August 28, 2001).

Fowler #7 Project

There are no known above-ground or archaeological resources listed in or eligible for listing in the National Register in the project's APE. No traditional cultural properties have been identified within the project's APE.

The Fowler #7 complex is eligible for listing in the National Register. The SHPO reviewed the proposed action and determined that the relicensing of this minor project would have no effect on the qualities that cause the Fowler #7 complex to be eligible for inclusion in the National Register (letter to K. Webb, CHI, Andover, MA, from R. Pierpont, Director, Historic Preservation Field Services Bureau, Waterford, NY, dated September 4, 2001).

b. Environmental Effects:

Under Section 106 of the NHPA of 1966 and the relevant implementing regulations (at 36 CFR 800), the Commission must take into account the potential effects of proposed undertakings on properties listed or eligible for listing in the National Register.

HDG does not propose any additional measures to protect historic properties.

The SHPO requests that HDG consult with SHPO about any future undertakings at the Fowler # 7 Project involving properties that might meet the criteria for listing in the National Register.

Our Analysis

We have reviewed the proposed actions relative to potential effects on National Register-eligible properties at the Fowler #7 Project and find that the proposed operational changes and environmental enhancement measures would involve only minor alterations to the physical fabric of the Fowler #7 complex. These minor alterations would include installation of a visible staff gage in the impoundment and a minimum flow release structure at dam #3. The visible staff gage would be consistent with other monitoring equipment in use at the project. The minimum flow release would be provided by cutting a notch in the flashboards (see section IV.C.2, Water Resources), which have been replaced over time and are not original to the project. Therefore, we agree with the SHPO that the relicensing of the Fowler #7 Project as proposed by HDG would have no effect on historic properties. Relicensing of the Fowler #7 Project would benefit the historic complex by maintaining its historic use as a hydroelectric facility.

HDG may need to undertake non-routine maintenance or repair at the Fowler #7 Project in the future. To ensure that any future plans would not unnecessarily adversely affect this historic property, we agree with the SHPO that consultation would be necessary. Therefore, we conclude that HDG should consult with the SHPO and the Commission prior to undertaking any non-routine maintenance or repairs at the Fowler #7 complex.

Implementation of the proposed environmental enhancement measures including development of portage areas and boating and fishing access facilities have the potential to affect as yet unknown archeological properties at both projects. Given that the HDG did not conduct cultural resource surveys and that the SHPO did not request such surveys, we find that consultation with SHPO would be necessary prior to implementation of any ground-disturbing activities at either project.

c. Unavoidable Adverse Effects: None.

V. DEVELOPMENTAL ANALYSIS

In this section, we analyze the projects' use of the water resources of the Oswegatchie River to generate power, estimate the economic benefits of the Oswegatchie projects, and estimate the cost of various environmental protection and enhancement measures and the effects of these measures on project operations.

Under its approach to evaluating the economics of hydropower projects, as articulated in Mead Corporation, Publishing Paper Division,[34] the Commission employs an analysis that uses current costs to compare the costs of the project and likely alternative power with no consideration for potential future inflation, escalation, or deflation beyond the license issuance

date. The Commission's economic analysis provides a general estimate of the potential power benefits and costs of a project and reasonable alternatives to project-generated power. The estimate helps to support an informed decision concerning what is in the public interest with respect to a proposed license.

For our economic analysis of alternatives, we used the assumptions, values, and sources, which apply to both projects unless otherwise noted, as shown in table 3.

A. Hailesboro #4 Project

1. Economic Benefits under the No-action Alternative

Under the no-action alternative, the Hailesboro #4 Project generates an average of 10,600,000 kWh of electricity annually, has an annual power value of \$560,790 (52.90 mills/kWh), and total annual costs of \$528,300 (49.84 mills/kWh), resulting in a net annual benefit of \$32,490 (3.06 mills/kWh).

2. Economic Benefits of HDG's Proposed Project

As proposed by HDG, the Hailesboro #4 Project would generate an average of 10,243,000 kWh of electricity annually, have an annual power value of \$547,620 (53.46 mills/kWh), and total annual costs of \$542,270 (52.94 mills/kWh), resulting in a net annual benefit of \$5,350 (0.52 mills/kWh).

HDG proposes to provide a minimum flow of 20 cfs from dam #1 and 8 cfs (existing leakage) from dam #2, with no capital cost and an annual energy loss of \$10,400, for a total annualized cost of \$10,400. An additional 77 cfs (for a total of 105 cfs) would be provided in the Middle Branch during walleye spawning periods when the combination of spillage and minimum flow releases is less than 105 cfs, with no capital cost and an annual energy loss of \$2,770, for a total annualized cost of \$2,770. HDG proposed to modify the outflow of the sluice gate to minimize injury to fish passing downstream via the 20-cfs minimum flow at dam #1, at a capital cost of \$15,450, for an annualized cost of \$2,100. HDG would consult with the FWS and NYSDEC regarding the need to install trashracks with a 1-inch clear spacing when the existing racks reach the end of their service life. It is estimated that it would cost \$82,410 to replace the racks; an annualized cost of \$11,180. HDG also proposed to provide a small boat/canoe take-out location near the Fowler powerhouse, along with appropriate signs and directions to a river access point downstream of the Hailesboro #3 Project. The Hailesboro share of this cost would be \$5,150, for an annualized cost of \$700.

HDG also proposed to continue to operate the project in a ROR mode and to continue to clear debris from Mr. Wranesh's property upstream of the dams, both at no additional cost.

Table 3. Staff assumptions for economic analysis of the Oswegatchie River Projects. (Source: Staff)

Assumption	Value
Power value (2002)a	36.88 mills/kWh
On-peak capacity value (2002)b	\$99/kW per year
Period of analysis	30 years
Interest/discount ratec	8.0 percent
Cost of moneyc	8.0 percent
Bond/debt ratiod	0.5
State and federal income tax ratec	34.0 percent
Local tax ratec	3.0 percent
Insurance rate	0.25 percent of cost of
Term of financing	20 years
Escalation rate after 2002	0 percent
Operation and maintenance (O&M) costs (2002\$)e	\$229,730 (Hailesboro #4) \$117,440 (Fowler #7)
Net investment (2002\$)f	\$2,201,370 (Hailesboro #4) \$99,440 (Fowler #7)

a Power value from Energy Information Administration (2001).

b Capacity value estimated by staff at \$99/kW-year based on replacement by a combined cycle combustion turbine.

c These values were estimated by staff.

d Assuming 50 percent of project capital costs would be financed, while remainder would be paid for out of internal capital.

e HDG provided operations expense estimates for the projects in their November 2, 2001, additional information request response: Hailesboro #4 (\$223,000) and Fowler #7 (\$114,000). Staff escalated the 2001 values to 2002.

f On March 15, 2002, HDG provided net investment values of \$2,277,278 for Hailesboro #4 and \$102,864 for Fowler #7 as of December 31, 2001. These values were depreciated by staff to 2002 values at a rate of one-thirtieth per year.

3. Economic Benefits of the Staff-recommended Alternative

Resource agencies and non-governmental organizations (NGO's) recommended implementing a variety of measures at the project. Staff reviewed each recommendation and determined the measures that were most appropriate for implementation.

As proposed by staff, the Hailesboro #4 Project would generate an average of 10,243,000 kWh of electricity annually, have an annual power value of \$547,620 (53.46 mills/kWh), and total annual costs of \$544,770 (53.18 mills/kWh), resulting in a net annual benefit of \$2,850 (0.28 mills/kWh). With our

recommended minimum flows, the Hailesboro # 4 Project would generate about 357,000 kWh less than under existing conditions. In addition, generation at the downstream Hailesboro #3 Project (P-5633), would also be reduced by about 161,000 kWh. Total generation loss at both projects would be 518,000 kWh.

Staff recommends several measures in addition to those proposed by HDG. Staff recommends that HDG develop and implement an operations compliance plan to monitor flows, pond levels, and water temperatures and to install gages and equipment to monitor stage and flows to ensure compliance with minimum flows and impoundment fluctuations and to predict when the walleye spawning period is expected to begin, with a capital cost of \$4,500 and a \$200 annual O&M cost, for a total annualized cost of \$810. Staff recommends that HDG develop and implement a final recreation plan for both projects; the Hailesboro share of the cost is estimated to be \$3,750, for an annualized cost of \$510. We recommend that HDG develop a car-top boat access on the impoundment with a capital cost of \$5,000 and an annual O&M cost of \$500, for a total annualized cost of \$1,180. Staff recommends several measures that are not expected to increase project costs, but would require HDG to: (1) limit headpond fluctuations to within 3 inches of the top of the flashboards or the crest of the dam if the flashboards have failed; (2) continue to use and maintain the pneumatic flashboards on dam #1; (3) implement erosion control measures during project maintenance and construction involving ground-disturbance; and 4) consult with the SHPO prior to any ground-disturbing activities.

Table 4 compares the power value, annual costs, and net benefits for the no-action alternative, the applicant's proposal, and the applicant's proposal with additional staff-adopted measures for the Hailesboro #4 Project.

In section VI, Comprehensive Development and Recommended Alternative, we discuss our reasons for recommending the staff alternative and why we believe the environmental benefits are worth these costs.

B. Fowler #7 Project

1. Economic Benefits under the No-action Alternative

Under the no-action alternative, the Fowler #7 Project generates an average of 5,700,000 kWh of electricity annually, has an annual power value of \$312,820 (54.88 mills/kWh), and total annual costs of \$130,930 (22.97 mills/kWh), resulting in a net annual benefit of \$181,890 (31.91 mills/kWh).

2. Economic Benefits of HDG's Proposed Project

As proposed by HDG, the Fowler #7 Project would generate an average of 5,623,000 kWh of electricity annually, have an annual power value of \$309,980 (55.13 mills/kWh), and total annual costs

of \$144,200 (25.64 mills/kWh), resulting in a net annual benefit of \$165,780 (29.49 mills/kWh).

HDG proposed to maintain a minimum flow of 16.5 cfs into the overflow channel below dam #3, with no capital cost and an annual energy loss of \$2,840, for a total annualized cost of \$2,840. HDG would consult with the FWS and NYSDEC regarding the need to install trashracks with a 1-inch clear spacing when the existing racks reach the end of their service life. It is estimated that it would cost \$92,710 to replace the racks, an annualized cost of \$12,570. HDG also proposed to provide a small boat/canoe take-out location near the Fowler powerhouse, along with appropriate signs and directions to a river access point downstream of the Hailesboro #3 Project. The Fowler share of this cost would be \$5,150, for an annualized cost of \$700.

Table 4. Summary of the annual net benefits for the no-action alternative, applicant's proposed action, and the applicant's proposed action with additional staff-adopted measures for the Hailesboro #4 Project. (Source: Staff)

	No action	Applicant's proposed action	Applicant's proposed action with additional staff-recommended measures
Installed capacity (kW) ^a	1,490	1,490	1,490
Annual generation (kWh) ^b	10,600,000	10,243,000	10,243,000 ^c
Annual power value (mills/kWh)	\$560,790 52.90	\$547,620 53.46	\$547,620 53.46
Annual cost (mills/kWh)	\$528,300 49.84	\$542,270 52.94	\$544,770 53.18
Annual net benefit (mills/kWh)	\$32,490 3.06	\$5,350 0.52	\$2,850 0.28

a HDG stated that the combined installed capacity of the two units is 1,490 kW (640 kW and 850 kW).

b In the initial consultation document, the average annual generation value provided for the project is 10.6 gigawatt-hours (GWh) (BWEC,1999a). A value of 11.0 GWh was provided in the license application, but the initial consultation document value is presumed to be more accurate.

c With our recommended minimum flows, the Hailesboro # 4 Project would generate about 357,000 kWh less than under existing conditions. In addition, generation at the downstream Hailesboro #3 Project (P-5633), would also be reduced by about 161,000 kWh. Total generation loss at both projects would be 518,000 kWh.

3. Economic Benefits of the Staff-recommended Alternative

As proposed by staff, the Fowler #7 Project would generate an average of 5,623,000 kWh of electricity annually, have an annual power value of \$309,980 (55.13 mills/kWh), and total annual costs of \$149,950 (26.67 mills/kWh), resulting in a net annual benefit of \$160,030 (28.46 mills/kWh).

Staff recommends several measures in addition to those proposed by HDG. Staff recommends that HDG develop and implement an operations compliance plan to monitor flows, pond levels and to install gages and equipment to monitor stage and flows to ensure compliance with minimum flows and impoundment fluctuations, with a capital cost of \$5,500 and a \$200 annual O&M cost, for a total annualized cost of \$950. Staff recommends that HDG modify the minimum flow structure in dam #3, as necessary, to minimize injury to fish passing downstream, at a capital cost of \$15,450, for a total annualized cost of \$2,100. Staff recommends that HDG develop and implement a final recreation plan for both projects; the Fowler share of the cost is estimated to be \$3,750, for an annualized cost of \$510. We recommend that HDG develop a car-top boat and angler access downstream of the powerhouse with associated picnic tables, for a capital cost of \$12,500 and an annual O&M cost of \$500, for a total annualized cost of \$2,200. Staff recommends several measures that are not expected to increase project costs, requiring HDG to: (1) limit headpond fluctuations to within three inches of the top of the flashboards or crest of the dam if the flashboards have failed; (2) implement erosion control measures during project maintenance and construction involving ground-disturbance; and (3) consult with the SHPO prior to any ground-disturbing activities.

Table 5 compares the costs, power values, and net benefits for the no-action alternative, the applicant's proposal, and the applicant's proposal with additional staff-adopted measures for the Fowler #7 Project.

Table 5. Summary of the annual net benefits for the applicant's proposed action, the applicant's proposed action with additional staff-adopted measures, and no-action alternative for the Fowler #7 Project. (Source: Staff)

	No action	Applicant's proposed action	Applicant's proposed action with additional staff-recommended measures
Installed	900	900	900

capacity (kW)a			
Annual generation (kWh)b	5,700,000	5,623,000	5,623,000 c
Annual power benefit (mills/kWh)	\$312,820 54.88	\$309,980 55.13	\$309,980 55.13
Annual cost (mills/kWh)	\$130,930 22.97	\$144,200 25.64	\$149,950 26.67
Annual net benefit (mills/kWh)	\$181,890 31.91	\$165,780 29.49	\$160,030 28.46

- a HDG stated that the combined installed capacity of the three units is 900 kW.
- b In the initial consultation document, the average annual generation value provided for the project is 5.7 GWh (BWEC, 1999b). A value of 6.0 GWh was provided in the license application, but the initial consultation document value is presumed to be more accurate.
- c With our recommended minimum flows, the Fowler # 7 Project would generate about 77,000 kWh less than under existing conditions.

4. Pollution Abatement Benefits

Hailesboro #4 Project

The Hailesboro #4 Project, as recommended by staff, would generate about 10.2 GWh of electricity annually. This amount of hydropower generation, when contrasted with the generation of an equal amount of energy by fossil-fueled facilities, avoids the emission of atmospheric pollutants. Assuming that the 10.2 GWh of hydropower generation would be replaced by an equal amount of natural gas-fired generation, generating electrical power equivalent to that produced by the Hailesboro #4 Project would require combustion of about 105 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 \$5,033 (2002\$) annually.

Fowler #7 Project

The Fowler #7 Project, as recommended by staff, would

generate about 5.6 GWh of electricity annually. This amount of hydropower generation, when contrasted with the generation of an equal amount of energy by fossil-fueled facilities, avoids the emission of atmospheric pollutants. Assuming that the 5.6 GWh of hydropower generation would be replaced by an equal amount of natural gas-fired generation, generating electrical power equivalent to that produced by the Fowler #7 Project would require combustion of about 58 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 \$2,763 (2002\$) annually.

VI. COMPREHENSIVE DEVELOPMENT AND RECOMMENDED ALTERNATIVE

Section 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 we review a proposed project, we equally consider the environmental, recreational, fish and wildlife, and other non-developmental values of the project, as well as power and developmental values. Accordingly, any license issued shall be best adapted to a comprehensive plan for improving or developing a waterway or waterways for all beneficial public uses.

Based on our independent review of agency and public comments filed on these projects, and our review of the environmental and economic effects of the proposed projects and their alternatives, we selected the proposed projects, with staff-recommended additional measures, as the preferred alternatives. We recommend these alternatives because: (1) issuance of new hydropower licenses by the Commission would allow HDG to operate the projects as economically beneficial and dependable sources of electrical energy for its customers; (2) the two projects would eliminate the need for an equivalent amount of fossil-fuel derived energy and capacity, which helps to conserve these nonrenewal resources and limit atmospheric pollution; (3) the public benefits of these alternatives would exceed those of the no-action alternative; and (4) the recommended measures would protect and enhance fish and wildlife resources and would provide improved recreational opportunities at the projects.

We recommend including the following environmental measures in any license issued for the two projects:

Hailesboro #4 Project

HDG's proposed enhancement measures that we recommend for the Hailesboro #4 Project are as follows:

- * continue operating the project in a ROR mode;
- * provide a minimum flow of 20 cfs from dam #1;

- * continue to provide a minimum flow of 8 cfs (existing leakage) from dam #2;
- * during walleye spawning season, provide a total of 105 cfs (additional 77 cfs) in the Middle Branch of the Oswegatchie River when the combined spillage and minimum flow release is below 105 cfs;
- * modify outflow of the sluice gate to minimize injury to any fish passing downstream via the 20 cfs minimum flow at dam #1; and
- * consult with the Interior and NYSDEC regarding the need for trashracks with a 1-inch clear spacing when the existing racks need replacement; and
- * clean debris from Mr. Wranesh's property, as needed. This would be implemented through a woody debris management plan to be developed by HDG, and through Standard Article 15 as described below.

In addition to HDG's proposed measures, we recommend the following measures for the Hailesboro #4 Project:

- * implement erosion control measures specified in a site-specific ESCP during project maintenance and construction involving ground disturbance;
- * develop a plan for the passage of large woody debris that collects near the project intake. The plan should include a provision to keep clear, to an adequate width, lands along the shoreline, and to dispose of brush, timber, and debris along the periphery of the project reservoir, as required by standard article 15 for any minor project license issued by the Commission;
- * limit impoundment levels to within 3 inches of the top of the flashboards or 3 inches from the crest of the dam if the flashboards are not in place;
- * continue to use and maintain pneumatic flashboards at dam #1;
- * develop and implement an operations compliance plan to monitor flows, headpond levels, and temperatures (to determine walleye spawning season) including provisions for all staff gages and equipment to monitor stage and flows;
- * provide parking at the portage put-in area downstream of Hailesboro #3 Mill Project;
- * provide access to the impoundment for boating and fishing with expanded parking near the powerhouse;

- * develop and implement a final recreation plan; and
- * consult with the SHPO prior to any ground-disturbing activities;
- * include the Island Branch diversion dam as part of the Hailesboro #4 Project facilities;
- * maintain a 30 cfs minimum flow in the Island Branch of the Oswegatchie River via a release through the fixed weir at the Island Branch diversion dam.

Fowler #7 Project

HDG's proposed enhancement measures that we recommend for the Fowler #7 Project are as follows:

- * continue operating the project in a ROR mode;
- * maintain a minimum flow of 16.5 cfs into the overflow channel below dam #3;
- * consult with Interior and NYSDEC regarding the need for trashracks with a 1-inch clear spacing when the existing racks need replacement; and
- * provide a small boat/canoe take-out location upstream of dam (near the powerhouse), along with appropriate signs and directions to a river access point downstream of the Hailesboro #3 Project;

In addition to HDG's proposed measures, we recommend the following measures for the Fowler #7 Project:

- * implement erosion control measures specified in a site-specific ESCP during project maintenance and construction involving ground disturbance;
- * limit impoundment levels to within 3 inches of the top of the flashboards or 3 inches of the crest of the dam if the flashboards are not in place;
- * develop and implement an operations compliance plan to monitor flows and headpond elevations including provisions for staff gages and equipment to monitor stage and flow;
- * provide parking at the portage take-out area upstream of the dam;
- * provide boating and angler access to the impoundment and downstream reach, with parking and picnic tables;

- * develop and implement a final recreation plan; and
- * consult with the SHPO prior to any ground-disturbing activities or non-routine maintenance of project facilities.

The costs of some of the measures that we recommend would reduce the net benefit of the projects. We discuss the basis for each additional measure below:

1. Operations Compliance Plan

HDG currently records impoundment water levels at both projects and tailwater elevations at the Hailesboro #4 Project using staff gages and water-level indicators located upstream and downstream of the project dams. NYSDEC and Interior recommend that HDG develop and implement a flow monitoring plan, including temperature monitoring at the Hailesboro #4 Project to determine the beginning and end of walleye spawning season. Documentation of compliance with our recommended impoundment limitations and minimum flows at the both projects, and temperature at the Hailesboro #4 Project would be necessary. In section IV.C.2, Water Resources, we determined that HDG would be able to provide a continuous minimum flow to the bypassed reaches at all times below the Hailesboro # 4 Project and below dam #3 at the Fowler Project, except during flashboard replacement. However, HDG needs to confirm our assumptions and explain how it intends to provide the additional minimum flows during walleye spawning season below Hailesboro #4. Therefore, we recommend that HDG develop, in consultation with NYSDEC and Interior, and file, for Commission approval, an operations compliance plan for both projects to document compliance with our recommended impoundment fluctuation and minimum flow recommendations. The plan should include provisions for temperature monitoring at the Hailesboro #4 Project and a proposed method to provide up to 105 cfs minimum flow into the bypassed reach during the walleye spawning season at the Hailesboro #4 Project. We estimate that the annual cost of an operations compliance plan would be \$1,760.

2. Access Areas for Fishing and Boating

HDG does not propose to provide public access to the downstream reach of the Fowler #7 Project or to the Hailesboro # 4 Project impoundment. AW and ADK recommend boating access above and below the Fowler #7, Hailesboro #6 Mill, Hailesboro #4, and Hailesboro #3 Mill Projects. Interior recommends that HDG provide free public access to all project lands and waters consistent with public safety and security. We conclude that formal access to the reaches downstream of the Hailesboro #4 Project is not warranted because they are relatively short reaches, are difficult to access, and the reach below dam #2 has a potentially dangerous obstacle in the form of a natural stone bridge over the reach. We also find that access above and below the Hailesboro #6 Mill Project is limited and may be unsafe

because of the weir structure that provides minimum flow to the Island Branch reach. Regardless, we would not be able to impose conditions for access on the Hailesboro #6 Mill Project through this proceeding on Hailesboro #4 Project. We conclude that additional access for boating and angling at the Hailesboro #4 and Fowler #7 impoundments and immediately downstream of the Fowler #7 powerhouse, with additional parking at the both powerhouses and portage locations, is warranted and would represent a reasonable enhancement of boating and angling opportunities at these projects.

Based on our observations, we would expect that these access locations could be provided at low cost through a combination of easements, minor vegetation clearing, and signage. We estimate that the annual cost of a car-top boat and angler access downstream of the Fowler #7 powerhouse and bank access to the impoundment with associated picnic tables and parking would be about \$2,200. We estimate that the annual cost of a car-top boat and angler access to the Hailesboro #4 impoundment, with additional parking adjacent to the existing parking near the powerhouse, would be about \$1,180.

3. Final Recreation Plan

HDG proposes to provide a small boat/canoe portage take-out above the Fowler #7 Project and directional signage along the highway to a put-in below the Hailesboro #3 Project. We recommend additional measures for boating and angling access to the project waters. Some of our additional recommended measures may require HDG to obtain easements.

To ensure that public access to the projects is realized, we recommend that HDG file a final recreation plan that includes the final locations and design drawings for its proposed portage put-in and take-out areas, and for the staff-recommended boating and angler access at the Hailesboro # 4 and Fowler #7 impoundments and downstream reach of the Fowler #7 Project. The final recreation plan should include a schedule for installation of the facilities. We estimate that the annualized cost for our recommended final recreation plan would be about \$510 for each project.

VII. RECOMMENDATIONS OF FISH AND WILDLIFE AGENCIES

Section 10(j) of the FPA requires the Commission to include license conditions, based on recommendations provided by the federal and state fish and wildlife agencies for the protection of, mitigation of adverse impacts on, and enhancements of fish and wildlife resources affected by the project.

Section 10(j) 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 such agency.

Tables 6 and 7 list Interior's recommendations subject to Section 10(j), and whether the recommendations staff recommends adopting the measures. Recommendations that we consider outside the scope of Section 10(j) have been considered under Section 10(a) of the FPA and are addressed in the specific resource section of this document.

Under Section 10(j) of the FPA, we made a determination in the draft EA, that two of Interior's recommendations may be inconsistent with the public interest and comprehensive planning standards of Sections 4(e) and Section 10(a) of the FPA. Consequently, we did not recommend adopting those measures. On August 12, 2002, FERC staff held a 10(j) meeting with Interior to discuss these measures, with resolution on all items. By letter dated August 27, 2002, Interior concurred with staff's recommendation to ensure instantaneous spillage when the units go offline. Interior also accepted staff's recommendation to include the Island Branch diversion dam, and associated 30 cfs minimum flow through a fixed weir in the diversion dam, as part of the project facilities for Hailesboro #4 Project. The recommendation to include the Island Branch diversion dam in the license for Hailesboro #4 will be further discussed in any order issuing license. Staff's final recommendations are reflected in Table 6.

In this final EA, we have addressed the concerns of the Federal and state fish and wildlife agencies and make recommendations consistent with those of the agencies. Therefore, there is no inconsistency with section 10(j) of the FPA.

Table 6. Analysis of Interior's fish and wildlife recommendations for Hailesboro #4 Project. (Source: Staff)

Recommended measure	Within the Annual Scope Cost of (2002\$) Section 10(j)	Total	Recommend
1. Operate project in strict river of river fashion, where inflow equals outflow.	Yes	\$0	Yes
2. Maintain impoundments within 3 inches of the top of the flashboards, or within 3 inches of the crest of the dam when flashboards are not in place, to ensure instantaneous flows to the	Yes	\$0	Yes

bypassed reach.

- | | | | |
|--|-----|----------|-----|
| 3. Continue to use pneumatic crest gates. | Yes | \$0 | Yes |
| 4. Develop a flow monitoring plan including all gages and equipment to measure project flows and water elevations. | Yes | \$810 | Yes |
| 5. Release a continuous "fish friendly" minimum flow of 20 cfs into the bypassed reach at dam #1 via the existing sluice. | Yes | \$12,510 | Yes |
| 6. Maintain a continuous minimum flow of 8 cfs at dam #2 including leakage, spillage, or other meansa | Yes | \$0 | Yes |
| 7. Ensure an additional 77-cfs release (for a total of 105 cfs) into the bypassed reach at dam #1 during walleye spawning season. | Yes | \$2,770 | Yes |
| 8. Release a continuous minimum flow of 30 cfs into the Island Branch via the fixed weir located at the Island Branch diversion dam. | Yes | \$0b | Yes |
| 9. Consult with FWS and NYSDEC when trashracks need replacement to determine the appropriate spacing for the replacement trashracks. | Yes | \$0 | Yes |
| 10. Provide the public free access to all project lands and waters, consistent with safety and security of the projects | Noc | \$0 | Yes |
-

a The cost for implementation of this measure is included in the cost for minimum flows at dam #1.

b There is no cost for implementing this flow since it has been provided since 1985.

c Not a specific fish and wildlife measure

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Table 7. Analysis of Interior's fish and wildlife recommendations for Fowler #7 Project. (Source: Staff)

Recommended measure	Within Total		Recommend
	the Annual	Adopting?	
	Scope Cost		
	of (2002\$)		

Section
10(j)

- | | | | |
|--|-----|---------|-----|
| 1. Operate project in a strict ROR fashion in which inflow equals outflow. | Yes | \$0 | Yes |
| 2. Maintain impoundments within 3 inches of the top of the flashboards, or within 3 inches of the crest of the dam when flashboards are not in place, to ensure instantaneous flows to the bypassed reach. | Yes | \$0 | Yes |
| 3. Develop a flow monitoring plan including all gages and equipment to measure project flows and water elevations. | Yes | \$950 | Yes |
| 4. Release a continuous "fish friendly" minimum flow of 16.5 cfs into the bypassed reach below dam #3 and consult with NYSDEC and FWS on the design of the minimum flow release structure. | Yes | \$4,940 | Yes |

- | | | | |
|--|-----|-----|-----|
| 5. Consult with FWS and NYSDEC when trashracks need replacement to determine the appropriate spacing for the replacement trashracks. | Yes | \$0 | Yes |
| 6. Provide the public free access to all project lands and waters, consistent with safety and security of the projects. | No | \$0 | Yes |
-

a Not a specific fish and wildlife measure.

VIII. 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 and state comprehensive plans for improving, developing, and conserving waterways affected by a project. Under Section 10(a)(2), federal and state agencies filed a total of 29 qualifying comprehensive plans of which we identified 3 New York and 3 federal to be applicable.[35] We did not find any conflicts.

IX. FINDING OF NO SIGNIFICANT IMPACT

We conclude that none of the resources that we studied (including geologic, water quantity and quality, fisheries, terrestrial, aesthetic, cultural, and recreational resources) would experience significant adverse effects under the proposed actions.

On the basis of the record and this EA, issuing new licenses for the projects, as proposed by the applicant, and as modified by the additional staff-recommended measures, would not constitute a major federal action significantly affecting the quality of the human environment. We conclude that no environmental impact statement is required for either action.

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APPENDIX A
STAFF RESPONSES TO COMMENTS ON THE DEIS

The Commission issued an Environmental Assessment for the proposed licensing of the Hailesboro #4 (FERC Project No. 6058-005) and Fowler #7 Project (FERC Project No. 6059-006) on June 28, 2002. The Commission requested that comments be filed within 30 days from the issuance date (by July 28, 2002). The following entities filed comments pertaining to the EA. In this appendix, we summarize the comments received, provide responses to those comments, and indicate where we have modified the text of the EA. The comments are grouped by topic for convenience.

Commenting Entity	Date
Adirondack Mountain Club (ADK)	of Letter July 26, 2002
Hydro Development Group, Inc. (HDG)	July 29, 2002
New York Rivers United, American Rivers, and American Whitewater (NYRU, AR & AW)	July 29, 2002
New York State Department of Environmental Conservation (NYSDEC)	July 30, 2002

Procedural and General

Comment: ADK comments on some minor typographical errors and omissions as follows: (1) Northern New York state peak power use is in the winter. Thus, the Niagara Mohawk peak load occurs in winter; (2) figure 2 on page 5 is missing a north arrow; (3) the average temperature for July is given as 76 degrees C, which is unreasonable; (4) figure 4 is referenced on page 14, but not included in the MPEA; (5) on page 36, Batten Kill River should read Batten Kill, since kill is a Dutch suffix meaning river, creek or stream. It has been Anglicized by detaching the suffix, which is why it is generally seen as Batten Kill, rather than Battenkill; and (6) the footnote on page 65 refers to the Nationwide Rivers Inventory of 1982, which was updated in 1995. However, the 1995 version is only available on CDROM, and thus not widely used.

Response: The reference to seasonal peaking in the Need for Power section referred to the entire NYISO region; not just the local area. We agree that the northern New York area, where the projects are located, experiences peak energy demand in the winter. Changes to the final EA have been made as appropriate.

Comment: HDG comments that the EA attempts to relate the capacity of Fowler #7 and Hailesboro #4 to HDG's total generating

capacity in order to minimize the importance of these two projects to HDG. The total capacity figure cited in the EA reflects the total hydroelectric capacity for all projects operated by subsidiaries and affiliates of CHI Energy, Inc., of which HDG is only one subsidiary. HDG owns and operates six hydroelectric projects totaling 10,160 MW. Hailesboro #4 and Fowler #7 constitute 24% of HDG's total generating capacity.

Response: We acknowledge that HDG, a subsidiary of CHI, owns and operates six hydroelectric projects totaling 10,160 MW and the two projects constitute 24% of HDG's total generating capacity. This change has been made in the final EA.

Comment: NYRU, AR & AW comment that the EA does not explain the basis for omitting the action alternative recommended in their NREA comment, namely, coordinated operation of these licensed projects and HDG's exempted projects, Hailesboro #6 and Hailesboro Mill #3 for the joint purposes of generation and environmental enhancement. They further comment that the four projects are already operated to maximize power generation and the Commission has the authority to reopen the exemptions to require coordinated operation for the purpose of environmental enhancement.

Response: NYRU, AR & AW requested a coordinated review of the two licensed and two exempted projects in its comments in response to the REA notice. NHI is correct that the EA does not explain why we did not consider this alternative. Briefly, we do not consider this a feasible alternative which could be implemented at this time. In this case, staff disagrees with NYRU, AR & AW's statement that the Commission has authority to reopen the exemptions for Hailesboro Mill #3 and Hailesboro #6 Projects. This issue will be addressed in detail in any order issuing license.

Comment: NYRU, AR & AW's comment that the EA does not respond to the request in their NREA comment that the Commission direct HDG to provide additional information or undertake studies regarding flow-habitat relationships for the fisheries that are the management priorities of NYSDEC and the FWS; the operating relationship between HDG's projects; and fish entrapment.

Response: We believe we have sufficient information, based on field demonstrations, to make our recommendations on minimum flows in support of target fisheries.

Comment: NYRU, AR & AW comment that the EA does not demonstrate consistency with comprehensive plans because it fails to analyze any management objectives or requirements in these plans. Furthermore, the EA does not respond to their NREA comment request for consideration of additional plans, including the Final Fishery Management Plan for the American Eel (April 2000)-Atlantic States Marine Fisheries Commission, and New York State's Process to Improve Surface Water Quality and Restore In-Stream

Riparian Habitat through Operation and Maintenance of Existing Modified Channels - NYSDEC, and Final Mitigation on Policy (1981) - FWS 46 Fed. Reg. 7644.

Response: Staff reviewed the comprehensive plans filed with FERC that were applicable to the Hailesboro #4 and Fowler #7 projects and did not find the projects to be inconsistent with the plans.

Additionally, The Atlantic States Marine Fisheries Commission, Final Fishery Management Plan for the American Eel (April 2000) states that "Each state is responsible for implementing management measures and the identification and protection of habitat within its jurisdiction to ensure the sustainability of the American eel population that resides within state boundaries". Currently New York State does not have a comprehensive American eel management plan for the Saint Lawrence River Basin to which to determine consistency. NYSDEC's "New York States's Process to Improve Surface Water Quality and Restore In-Stream Riparian Habitat through Operation and Maintenance of Existing Modified Channels" and FWS's "Final Mitigation Policy", 46 Fed. Reg. 7644 (1981) are the policies of two agencies that are participating in the relicensing procedures for the Hailesboro #4 and Fowler #7 projects and they have not found the projects to be inconsistent with their policies.

Cumulative Effects

Comment: NYRU, AR & AW comment that the EA does not require adequate mitigation for the project's cumulative impacts on the Oswegatchie. The EA recommends against adoption of FWS's 10(j) measure that Hailesboro #6 release 30 cfs into the Island Branch, since it is an exempted project that is not the subject of the proceeding. However, NYRU, AR & AW comment that the Commission has the authority to reopen the exemption as appropriate to mitigate the cumulative impacts of HDG's system.

Response: The incorporation of the Island Branch diversion dam into the Hailesboro #4 license, resolves this issue. The Commission's Authority to reopen the exemptions in this case will be addressed in any order issuing license.

Water Quality and Quantity

Comment: HDG comments that it would continue to release the existing minimum flow of 30 cfs into the Island Branch of the Oswegatchie River for Hailesboro #4 as recommended by NYSDEC and the U.S. Department of the Interior (USDI) and also supported by staff. Staff suggests that the Island Branch diversion dam and the 30 cfs minimum flow be included within the project works for either Hailesboro #4 or Fowler #7. HDG comments that they do not object and suggest that it is more appropriately included with Hailesboro #4, since flows provided by the structure are part of the Hailesboro #4 mitigation package and have little or no connection with Fowler #7.

Response: We agree, and recommend including the Island Branch diversion dam and weir in the Hailesboro # 4 license.

Comment: HDG comments that they agree with the staff's position that the fluctuation limits provided in the WQC (impoundment fluctuation to within 2 inches of the flashboard crest or 3 inches from permanent dam crest, if flashboards are not in place) are generally consistent with run-of-river operations and provide a reasonable allowance for safe maintenance of the project's flashboards. HDG also comments that the details of operation and compliance are most appropriately dealt with in an Operation Compliance Plan developed in consultation with resource agencies following license issuance.

Response: This issue was resolved during the 10(j) teleconference held August 12, 2002, as discussed in the final EA. Interior now agrees with the staff recommendation.

Comment: HDG comments that the recommended adoption of the Interior's recommendation for the continued use of pneumatic flashboards at the Hailesboro #4 Project is an operational issue outside of the regulatory purview of Interior. Furthermore, HDG claims that the environmental benefits of using pneumatic flashboards on Dam #1 are much less than claimed since headpond fluctuations are needed for repair because standard wooden flashboards are installed on Dam #2.

Response: Regardless of the magnitude of the benefits, we believe that the pneumatic flashboards on Dam #1 provide some operational benefit to the Hailesboro #4 Project. It should also be noted that the existing pneumatic flashboards are permanent features of the project as licensed, and therefore, if HDG proposes to replace the pneumatic flashboards with a different configuration at some time in the future, they would need to obtain FERC approval.

Fisheries Resources

Comment: NYRU, AR & AW comment that the recommended minimum flow schedules are not supported by substantial evidence in the record. They comment that the EA relies on staff's October 11, 2001 field visit as the basis for concluding that flows additional to the recommended minimum flow schedule would not provide additional benefit for the fisheries. They further comment that the EA does not respond to their request that generally accepted scientific literature should be the basis absent any field studies.

Response: HDG conducted flow demonstrations, an acceptable practice for determining minimum flow schedules (MFS), at both projects. The NYSDEC and FWS, the agencies responsible for managing the fisheries in the project area, participated in these flow demonstrations. Previous fisheries studies (Williams 1985,

Carlson 1992) document habitat type and species present in the project areas and other publications (Geiling 1995, Scott and Crossman 1973, Smith 1985) document specific habitat and flow needs for the different life stages of the various species found in the project areas. Staff evaluated MFS based upon this compilation of information in combination with information obtained during the Staff's site visit on October 11, 2001 and mitigation measures recommended by the agencies. The FWS and NYSDEC concur with all flow recommendations we make in the final EA.

Comment: NYSDEC comments that the Commission staff recommendations are consistent with the WQC for both projects.

Response: None required.

Recreational Resources

Comment: ADK comments that the consultation requirement for the recreational plan, as described on page 60, is inconsistent with that on page 46 in that NYSDEC, and AW are listed on both pages, ADK and Town of Hailesboro are only mentioned on page 46, and FWS is only listed on page 60. ADK comments that they would be pleased to consult in the detailed recreation plan and states that the two pages should be consistent. They further comment that the Town of Hailesboro is an unincorporated hamlet within the Town of Fowler and should be deleted from the list. ADK also recommends asking the FWS and suggests that the National Park Service may want to be involved as well.

Response: We have corrected these inconsistencies as appropriate in the final EA. We do not think that NPS needs to be included as they have made no request to be involved to this point.

Comment: ADK comments that the addition of recreational features to Hailesboro #4 and Fowler #7, as recommended in the EA, is desirable for the public.

Response: No comment required.

Comment: HDG comments that the recreation and public access enhancements are substantially expanded beyond those agreed to by HDG and the resource agencies during pre-filing consultation. They comment that the recreational opportunities are restricted by the limited amount of property owned by HDG, lack of public lands bordering the Oswegatchie and the small size of the impoundments. HDG comments that the final details of public access should be handled within a formal Recreation Plan filed as a license condition.

Response: We agree. HDG should work with adjacent land owners to obtain the necessary easements for areas where they do not own sufficient land.

Comment: HDG comments that public access to Fowler #7 Project is

contingent upon their ability to obtain a public access easement from the owner of the project's access road.

Response: HDG should continue their attempts to gain easements.

Comment: HDG comments that they disagree with the staff's conclusion that headpond access and public parking should be provided at Hailesboro #4. They are unaware of potential access via Chub Lake Road and state that property held by HDG is too close to the project intake and spillway to provide appropriate and safe public access.

Response: HDG, resource agency, and Commission staff discussed and viewed potential locations for access near a fire hydrant on Chub Lake Road.

Comment: HDG disagrees that they should be responsible for publishing flow information for recreationists since both projects will continue to operate run-of-river and general flow levels for West Branch Oswegatchie River near Harrisville, NY can be easily accessed from the US Geological Survey's website and prorated to the project area.

Response: If the flow data is easily accessed and prorated, then HDG should do it and set up an 800 telephone number or web site to distribute the information. We believe HDG would be more adept at prorating the flow data than the general recreating public.

Comment: NYRU, AR & AW support the improved public access and the recreation plan, as recommended in the EA.

Response: No comment required.

Comment: NYRU, AR & AW state that the EA does not require public access at critical locations. They request that portage be provided at Hailesboro #4 and at Fowler #7, and that the Commission has the authority to reopen the exemption of Hailesboro #6 to mitigate adverse impacts on navigation.

Response: Staff evaluated the need for boat access and portage at four projects on the Oswegatchie River, at the Island Branch, and at the Middle Branch. Our conclusions are presented in detail in section IV(C)(6b) of this EA, and are based on the feasibility of providing safe, adequate facilities at the site, and the recreation demand in the area. Staff recommend development of upstream and downstream boat access at the Fowler #7 Project. This access would double as a portage option for canoeists that would like to portage the Fowler #7 dam to access the rapids below the dam. Portage at Island Branch diversion dam was not recommended because typical flows in the Island Branch did not provide waters safely navigated by canoes or kayak, the low potential use of a formal portage, and the ability to traverse the low banks around the dam, if necessary. Portage at

Hailesboro #6 was not recommended due to safety considerations. Portage at Hailesboro #4 was not recommended for safety reasons and the necessity to cross a restricted area at the intake canal. If through-canoeist access the river above Hailesboro #4, they would be able to utilize the car-top boat access that is proposed at Hailesboro #4 as a take-out, and the informal access site below Hailesboro #3 as a put-in.

It is not likely that portage provisions at the Hailesboro #6 Project, Island Branch diversion dam, and Hailesboro #4 Project would benefit more than a handful of individuals. We base this conclusion on the portage use at the Emeryville project, upstream of Fowler #7, which is estimated to be 2 percent of capacity in the most recent FERC Form 80, Recreation Report for that project. However, because there is a potential for increased recreation demand at the Hailesboro/Fowler Projects, we are recommending that HDG monitor recreation use to determine the number of individuals using the portage and put-in, take-out facilities in the project area. This information may provide the support for recommending additional portage facilities as demand increases. Information collected and filed pursuant to the reporting requirements for FERC Form 80, Recreation Report, would be sufficient for such a monitoring program.

The issue of the Commission's authority regarding reopeners for exemptions in this case will be discussed in any order issuing license.

Developmental Analysis

Comment: HDG comments that the EA fails to account for generation and revenue losses at Hailesboro #3, which result from the 28 cfs minimum flow at Hailesboro #4 (\$18,000 2001 dollars) and the additional 105 cfs walleye spawning flow (\$4,000 2001 dollars). The analysis should be revised accordingly.

Response: It is correct that our economic analysis only considered energy losses at Hailesboro #4, the project being licensed, and not the exempted Hailesboro #3 Project. We agree, however, that energy losses at other projects should be identified and have done so in the final EA.

Comment: HDG comments the developmental analysis does not properly account for revenue losses due to the provision of minimum flows at either Hailesboro #4 or Fowler #7. For Hailesboro #4, the EA (p. 47) incorrectly states that the 20 cfs from dam #1 and the 8 cfs from dam #2 will result in a capital cost of \$39,150 and an annual energy loss of \$10,400 for a total annualized cost of \$1710 and the additional 77 cfs during walleye spawning periods would result in a capital cost of \$10,300 and an annual energy loss of \$2,770 for a total annualized cost of \$4,170. As HDG stated in the AIR response, the 28 cfs minimum flow will result in an annual loss of \$38,000 (2001 dollars) and

the additional 105 cfs walleye spawning flow will result in an annual loss of \$10,000 (2001 dollars). HDG also comments that similar errors were made in the Fowler #7 analysis, where they reported an anticipated annual revenue losses of \$1,400.

Response: We have determined that we misinterpreted the information provided in HDG's Additional Information Request (AIR) responses dated November 2, 2001 for each project. There would be no capital costs associated with the required minimum flow releases at the two projects. The final EA has been modified to reflect this change. We estimated the annual loss in revenues associated with the minimum flow requirements at a rate of \$52.90 per megawatt-hour as stated in the EA. The value of our energy loss estimates does not approximate the values stated by HDG in their AIR responses because we used different energy rates. We believe that the energy rate used in the EA is reasonable and appropriate for the purpose of comparing alternatives.

Comment: HDG comments that the "fish friendly" modifications would cost \$15,000 (2001 dollars) for Hailesboro #4, which appear to be properly accounted for in the EA. However, the EA recommends that similar "fish friendly" modifications of the minimum flow discharge be implemented at Fowler #7, but the cost is not accounted for in the analysis. HDG recommended that the developmental analysis be modified to account for these costs, which they estimate to be the same as for Hailesboro #4 (\$15,000 in 2001 dollars).

Response: We acknowledge that it would cost approximately \$15,000 in 2001 dollars to modify the minimum flow discharge structure at Fowler #7 to be more "fish-friendly." Implementation of this measure would result in an annual cost of \$2,100. We have revised the developmental analysis to include this cost at Fowler #7 and the new numbers (with slight variation) are presented in the final EA.

Footnotes

[1]16 U.S.C. ** 797(e), 803(a)(1).

[2]On January 10, 1983, the Commission issued an order granting an original license for the Hailesboro #4 Project, to expire on December 31, 2002. See Hydro Development Group, Inc., 22 FERC * 62,019 (1983).

[3]9 FPC 1323 (1950).

[4]The project does not occupy any federal lands.

[5]References in this order to the EA are to the Final EA unless otherwise specified. Comments on the draft EA were received from HDG, Interior, the Adirondack Mountain Club, and jointly by New York Rivers United, American Rivers, and American Whitewater Affiliation.

[6]16 U.S.C. ** 803 and 808.

[7]In Order No. 513, we exempted licensees of minor projects, such as HDG, whose licenses waive Sections 14 and 15 of the FPA, from the information filing requirements of 18 C.F.R. * 16.10. See 54 Fed. Reg. 23756 (June 2, 1989) and 55 Fed. Reg. 10768 (March 23, 1990), FERC Statutes and Regulations, Regs. Preambles 1986-1990 * 30,854 at p.31,445 (May 17, 1989) and 18 C.F.R. * 16.20(d).

[8]33 U.S.C. * 1341(a)(1).

[9]33 U.S.C. * 1341(d).

[10]16 U.S.C. * 1456(3)(A).

[11]16 U.S.C. * 811.

[12]Lynchburg Hydro Associates, 39 FERC *61,079 (1987).

[13]16 U.S.C. * 803(j).

[14]16 U.S.C. * 661 et seq.

[15]These recommendation were considered under Section 10(a) of the FPA and were, for the most part, adopted as conditions of the license.

[16]These issues are addressed in detail in the final EA at Appendix B of this order.

[17]16 U.S.C. * 1536(a).

[18]16 U.S.C. * 803(a)(2)(A).

[19]Comprehensive plans are defined at 18 C.F.R. * 2.19 (2002).

[20](1) National Park Service. 1982. Nationwide Rivers Inventory. U.S. Department of the Interior. Washington, D.C. January 1982. 432 pp; (2) Fish and Wildlife Service. Canadian Wildlife Service. 1986. North American Waterfowl Management Plan: A Strategy for Cooperation. U.S. Department of the Interior and Environment Canada. Washington, D.C. May 1986. 19 pp.; (3) Fish and Wildlife Service. Undated. Fisheries USA: The Recreational Fisheries Policy of the U.S. Fish and Wildlife Service. Washington, D.C. 11 pp.; (4) New York State Department of Environmental Conservation. 1985. New York State Wild, Scenic, and Recreational River System Act. Albany, New

York. March 1985. 22 pp.; (5) New York State Department of Environmental Conservation. 1986. Regulations for Administration and Management of the Wild, Scenic, and Recreational Rivers System in New York excepting the Adirondack Park. Albany, New York. March 26, 1989. 27 pp.; and (6) New York State Parks, Recreation, and Historic Preservation. State Comprehensive Outdoor Recreation Plan. 1994.

[21]See Hydro Development Group Inc., 16 FERC * 62,453 (1981).

[22]18 C.F.R. * 4.106(f). Standard Exemption Article 6 states that

In order to best develop, conserve, and utilize in the public interest the water resources of the region, the Commission may require that the exempt facilities be modified in structure or operation or may revoke this exemption.

[23]18 C.F.R. * 2.23, which provides in part that

Hydropower licenses also contain standard 'reopener' articles ... which reserve authority to the Commission to require, among other things, licensees of projects located in the same river basin to mitigate the cumulative impacts of those projects on the river basin....

[24]Commission regulations applicable to that exemption were issued in Exemption from All or Part of Part I of the Federal Power Act of Small Hydroelectric Power Projects with an Installed Capacity of Five Megawatts or Less, 45 Fed. Reg. 76,115 (November 18, 1980), Order No. 106, FERC Statutes and Regulations, Regulations Preambles 1977-81 * 30,204 at 31,372-73, codified with five standard articles at 18 CFR * 4.106, effective November 7, 1980.

[25]See City of Rock Falls, Illinois, 56 FERC * 61,020 (1991), citing Hirschey v. FERC, 701 F.2d 215 (D.C. Cir. 1983), and International Paper Co. v. FERC, 737 F.2d 1159 (D.C. Cir. 1984).

[26]16 U.S.C. ** 797(e) and 803(a)(1).

[27]72 FERC * 61,207 (1995).

[28]16 U.S.C. *808(e).

[29]See Duke Power Co., 72 FERC * 61,030 (1995).

[30]Late-filed motion granted by the Commission on March 8, 2002.

[31]Late filed motion granted by the Commission on March 13, 2002.

[32]Filed on behalf of New York Rivers United (NYRU), American Rivers (AR), and American Whitewater (AW).

[33]NYSDEC defines walleye spawning season as beginning when water temperatures reach 4 degrees Celsius (C) for 4 consecutive days after March 15 and continuing until 30 days after water temperatures reach 10 degrees C.

[34]72 FERC * 61,027 at 61,068-70 (1995)

[35](1) National Park Service. 1982. Nationwide Rivers Inventory. U.S. Department of the Interior. Washington, D.C. January 1982. 432 pp; (2) Fish and Wildlife Service. Canadian Wildlife Service. 1986. North American Waterfowl Management Plan: A Strategy for Cooperation. U.S. Department of the Interior and Environment Canada. Washington, D.C. May 1986. 19 pp.; (3) Fish and Wildlife Service. Undated. Fisheries USA: The Recreational Fisheries Policy of the U.S. Fish and Wildlife Service. Washington, D.C. 11 pp.; (4) New York State Department of Environmental Conservation. 1985. New York State Wild, Scenic, and Recreational River System Act. Albany, New York. March 1985. 22 pp.; (5) New York State Department of Environmental Conservation. 1986. Regulations for Administration and Management of the Wild, Scenic, and Recreational Rivers System in New York excepting the Adirondack Park. Albany, New York. March 26, 1989. 27 pp.; and (6) New York State Parks, Recreation, and Historic Preservation. State Comprehensive Outdoor Recreation Plan. 1994.