

APPLICATION REVIEW FOR
LOW IMPACT HYDROPOWER INSTITUTE
CERTIFICATION
of the
WORONOCO HYDRO LLC PROJECT NO. 2631



JANUARY 17, 2011

Application Reviewer: Patricia McIlvaine

WRIGHT-PIERCE 
Engineering a Better Environment

**APPLICATION REVIEW FOR LOW IMPACT HYDROPOWER
INSTITUTE CERTIFICATION**

WORONOCO HYDRO LLC PROJECT NO. 2631

TABLE OF CONTENTS

SECTION	DESCRIPTION	PAGE
1.0	INTRODUCTION AND OVERVIEW.....	1
1.1	Application Review.....	1
1.2	Project and Site Characteristics.....	2
1.3	Regulatory History.....	4
1.4	Public Comment.....	6
2.0	CRITERIA ASSESSMENT	7
2.1	Criteria A - River Flows	7
2.2	Criteria B - Water Quality	8
2.3	Criteria C - Fish Passage and Protection	10
2.4	Criteria D - Watershed Protection.....	17
2.5	Criteria E - Threatened and Endangered Species Protection....	19
2.6	Criteria F - Cultural Resource Protection	20
2.7	Criteria G - Recreation	21
2.8	Criteria H - Facilities Recommended for Removal.....	23
3.0	RECOMMENDATION	24
4.0	RECORD OF COMMUNICATIONS	26

APPENDICES

- A FERC ORDERS REFERENCED IN THIS REVIEW
- B COPIES OF COMMUNICATIONS WITH RESOURCE AGENCIES

APPLICATION REVIEW FOR LOW IMPACT HYDROPOWER INSTITUTE CERTIFICATION

WORONOCO HYDRO LLC - WORONOCO PROJECT NO. 2631

1.0 INTRODUCTION AND OVERVIEW

This report reviews the application submitted by Woronoco Hydro LLC (Woronoco or Applicant) to the Low Impact Hydropower Institute (LIHI) for Low Impact Hydropower Certification for the Woronoco Project (Project or Facility). The Woronoco Project, located on the Westfield River in Hampden County, Massachusetts, is currently licensed by the Federal Energy Regulatory Commission (FERC) as Project Number 2631. While Woronoco owns the Project, Swift River Hydro Operations Company is the company that manages and operates the station; Swift River filed the application to LIHI.

The initial LIHI certification review conducted in April of 2010 found that many requirements dealing with fish passage were still incomplete, particularly in light of written public comments received from state and federal resource agencies in early 2010, as referenced below and attached hereto. Because of discussions between LIHI and the applicant regarding these unresolved issues, Woronoco asked that its application be held in abeyance until these issues were resolved. In a letter dated November 17, 2010, Woronoco requested LIHI to re-start its review of their certification application, and submitted to LIHI a series of letters and reports that Woronoco believes to document resolution of the outstanding issues associated with fish passage and protection.

1.1. Application Review

This application review was conducted by Patricia McIlvaine, Project Manager with Wright-Pierce. My review of Woronoco Hydro LLC's application for certification as a "low impact hydropower facility" under the criteria established by the LIHI consisted of the following:

- review of information submitted by the applicant both in the initial application package and in response to document requests and questions raised by me;

- review of additional documents obtained from the FERC on-line database available for public review;
- consultation with the resource agency personnel listed in Section 4.0 of this report; and
- consideration of recommendations provided by resource agencies regarding certification of the Woronoco Project by LIHI in their comment letters.

1.2 Project and Site Characteristics

The Westfield River originates in Northwestern Massachusetts and flows 78.1 miles to its confluence with the Connecticut River in West Springfield. The Woronoco facility is located 18.5 miles upriver from the confluence of the Westfield and the Connecticut Rivers. Immediately downstream of the Woronoco facility is a substantial water fall (Woronoco Falls). Further downstream on the Westfield is one hydropower facility, the West Springfield dam, located 4.1 miles upriver from the confluence with the Connecticut River. Below the confluence of the Westfield and Connecticut Rivers there are no dams on the main stem of the Connecticut River before it enters Long Island Sound. Two additional dams are located upstream of the applicant's facility on the Westfield, approximately three and six miles upstream.¹ The West and Middle Branches of the Westfield join the main stem of the Westfield River upstream of the Crescent Dam Project, while the Little River joins the Westfield River downstream of Woronoco Falls.

The Project's principal features consist of:

- two non-contiguous concrete-gravity dams of a height of about 25 feet and lengths of 351 feet (South Dam) and 307 feet (north Dam) and a 655 feet long earthen dike with a sheet steel core. Both dams have concrete ogee-shaped spillways built on ledge outcroppings, and deep discharge gates. A steel sluice gate is adjacent to the trashracks on the South Dam and a steel mud gate in the North Dam;
- a 40 feet wide, 15 foot high intake structure with 1.25 inch clear bar spacing trashracks;

¹ Russell Falls and Crescent Dam Project

- an 11 foot diameter 550 foot long concrete-lined steel penstock;
- a 59 foot by 59 foot concrete and brick powerhouse which contains three horizontal Francis turbine/generator units with an installed capacity of 2.7 MW. Two of the units having an original capacity of 400kW were repowered to 490 kW each by Woronoco. Unit #2 began generation in July 2005; Unit #1 began generation in April 2008;
- a transformer switchyard building;
- a 1.2 mile long, 43-acre impoundment at the normal pool elevation having a volume of approximately 172 acre-feet. Average depth is four feet with a maximum depth of eight feet. Storage capacity is negligible;
- a 5 acre tailrace pond which is a natural river pool rimmed by ledge outcropping;
- a bypass reach with three channels, varying in length from 200 to 1,000 feet;
- a interim downstream fish passage facility constructed in 1998 was replaced with a new one in April 2010, located in the center of the trask racks, along with installation of new trashracks with $\frac{3}{4}$ inch clear spacing on the penstock intake; and
- three upstream eel passages were installed in 2006 by Woronoco. The one at the North channel was damaged by ice in 2007. A new location for the replacement ladder was selected to improve its effectiveness and the ladder was constructed in July 2010.

The current South Dam was built in 1950, replacing a timber crib dam built in 1872. The North Dam was constructed after the 1938 hurricane flood swept away the area that now forms the bypass reach below this dam section. Other than the repowering of the two units (which ceased operating in the 1980's), no new capacity is currently planned for installation.

The Project is operated in a run-of-river mode such that outflows are approximately equal to the sums of the inflows to the Project impoundment on an instantaneous basis. The project is operated to minimize fluctuations to within one inch of its licensed elevation of 229.0 feet National Geodetic Vertical Datum (NGVD). Further details on these requirements are presented under the applicable Criteria Assessments.

1.3 Regulatory History

The Project was initially licensed by the FERC in June 1981. In 1999, International Paper Company (IP) applied for a license renewal. On May 22, 2001, FERC approved substitution of the relicense applicant from IP to Woronoco Hydro LLC. The new license was approved on April 30, 2002, with a term of 40 years. International Paper received a Clean Water Act Section 401 Water Quality Certificate (WQC) from the Massachusetts Department of Environmental Protection (MADEP) on August 30, 2000, which was amended on September 29, 2000. The WQC was not formerly transferred to Woronoco Hydro LLC, but is still applicable as it applies to the facility. All requirements of the WQC were incorporated into the FERC license.

Since acquiring the Project and regulatory responsibility in 2002, Woronoco has completed a number of the required studies, filed necessary reports, installed required features and received FERC approval for a number of the Article requirements. However, and set forth in the table below, over an eight year period and prior to April 2010 Woronoco had also requested and been granted a large number of extensions for complying with fish passage and protection requirements, resulting in significant delays in their implementation. This regulatory history has created concern for the regulatory agencies, as further discussed in Section 2.3 - *Criteria C - Fish Passage and Protection*. The following table summarizes the key regulatory approvals associated with issues important to LIHI certification during my initial review of the project in April of this year.

Requirement	Extension Request Approval Dates	Final (F) or Partial (P) Approval Date
Article 401 - Establishes that operation of the project will be run-of-river, an impoundment target elevation and requirement to minimize impoundment fluctuations. Also requires reporting of non-compliance with impoundment target elevation requirements to FERC and MADEP.	Not applicable (NA)	Actions required when events warrant notification.
Article 402 - Establishes specific minimum flow requirements	No action required	NA
Article 403 - Requires development of a flow monitoring to provide a means to verify run-of-river operation and conformance with the minimum bypass flow and fish passage flow requirements. Also requires reporting of non-compliance with flow requirements to FERC and MADEP.	2/12/03 2/12/04	7/27/04 (F) Actions required when events warrant notification.
Articles 404 & 405 - Requires development of a comprehensive fish passage plan, including provisions to install, operate, maintain, and evaluate effectiveness of upstream and downstream passage for Atlantic Salmon and American Eel.	2/12/03 6/18/03 2/12/04 8/01/07 7/21/08 9/15/08 11/26/08 4/03/09 11/25/09 1/11/10	4/20/06 (P) 4/09/08(P) 11/25/08(P) 7/21/09 (P) 7/23/09 (P) 3/01/10 (P) All requirements not yet satisfied.
Article 406 - Requires development of an impoundment drawdown management designed to minimize effects on freshwater mussels and other aquatic life.	2/12/03	12/04/03 (P) 7/27/04 (F)
Article 407 - Requires consultation with the MA SHPO and development of a "protection plan" prior to land disturbance, projects affecting the powerhouse and adjacent Strathmore Mill (National Register eligible properties) or discovery of previously unidentified historic properties.	NA	Required when activities warrant consultation.
Article 408 - Requires development of a recreational enhancement plan and installation of five specified facilities.	2/12/03	3/03/05 (P) Plan approved; facilities installed; some signage not yet completed.

Details of the license requirements and issues associated with the listed submissions are discussed under each applicable Criteria discussion.

1.4 Public Comment

Written comments on Woronoco Hydro LLC's application for certification were received by the LIHI from the following agencies when the application was filed with LIHI early last year:

- Dr. Caleb Slater of the MA Division of Fisheries & Wildlife dated February 23, 2010
- Mr. Thomas Chapman of the USDI, Fish and Wildlife Service dated March 25, 2010
- Mr. Robert Kubit of the MADEP, Division of Watershed Management dated March 25, 2010

A copy of each letter is contained in Appendix A. All three agency representatives stated at that time that they do not support certification of the project at this time. Dr. Slater and Mr. Chapman cite the lack of completeness of license conditions associated with fish passage as the primary basis of their decision. Mr. Chapman identifies the numerous extension requests and past delays as cause for concern of the commitment of Woronoco to meet current deadlines. Mr. Kubit also expresses concern of the project's impact on fisheries.

All three suggested in their written comments that certification may be appropriate when all fish passage commitments, including structure installation and effectiveness testing, are finally satisfied, but only then if Woronoco also eliminated its stated plans at that time for installation of 30 inch flashboards at the dam, due to negative impacts on wetlands and upstream free-flowing habitats. Woronoco has since abandoned its plans to install the flashboards. Discussions held with these individuals are incorporated in the applicable Criteria sections and set forth in the Record of Communications.

2.0 CRITERIA ASSESSMENT

The Low Impact Hydropower Institute certifies those hydropower facilities that meet its eight criteria:

2.1 Criteria A - River Flows:

***Goal:** The facility (dam and powerhouse) should provide river flows that are healthy for fish, wildlife, and water quality, including seasonal flow fluctuations where appropriate.*

***Standard:** For instream flows, a certified facility must comply with recent resource agency recommendations for flows. If there were no qualifying resource agency recommendations, the applicant can meet one of two alternative standards: (1) meet the flow levels required using the Aquatic Base Flow methodology or the “good” habitat flow level under the Montana-Tennant methodology; or (2) present a letter from a resource agency prepared for the application confirming the flows at the facility are adequately protective of fish, wildlife, and water quality.*

The Woronoco Project operates as a run-of-river facility, and is operated to minimize fluctuations to within one inch of its licensed elevation of 229.0 feet National Geodetic Vertical Datum (NGVD). River flow limits established under Article 402 of the FERC license, which are identical to those set in the MEDEP WQC, consist of a minimum flow of 57 cubic feet per second (cfs), or inflow, whichever is less, as measured in the north and south bypass reaches. The 57-cfs flow must consist of 35 cfs in the south channel and 22 cfs in the north channel. Compliance with minimum flow discharge requirements is monitored via a camera focused on marked rock outcrops and embedded poles used to measure water levels in designated areas. Camera output is required to be monitored for hourly weekday recordings and evaluation on Mondays for weekends.

Agency and NGO concerns regarding flow compliance included potential for debris blockage of the narrow gate opening, the frequency of inspection of these gates, backwater effects that may artificially raise the water levels where monitoring is done and lack of sensitivity of the cameras

to determine small changes in water levels where flow monitoring will be done. Consultation with these entities and modifications to original monitoring plans resulted in agreement with the final approved plan. Calculations to determine required gate opening dimensions were reviewed and approved by the US Fish and Wildlife Service.

Woronoco has stated that they had no flow deviations in their annual compliance reports to FERC, since license acquisition in April 2002. Consultation with MEDEP also indicated that no notices were received by the MADEP regarding flow limit non-compliance events.

While no deviations have been reported to FERC by Woronoco, in a May 28, 2009 letter submitted by FERC to Woronoco, forwarding results of an inspection performed on May 20, 2009, FERC noted that the flow observed in the north channel appeared limited, likely due to either the gate not being properly opened or obstructed (See Appendix B). Woronoco reported in a letter to the FERC dated October 7, 2009, that debris clogging the deep gate discharging the flow was removed the "next day" and that "all gates are maintained by regular weekly flushing" to eliminate such blockages.

A. Flows – The Facility is in Compliance with Resource Agency Recommendations issued after December 31, 1986 regarding flow conditions for fish and wildlife protection, mitigation and enhancement for both bypass reaches. FACILITY PASSES.

2.2 Criteria B - Water Quality:

Goal: Water quality in the river is protected.

Standard: The water quality criterion has two parts. First, a facility must demonstrate that it is in compliance with state water quality standards, either through producing a recent (after 1986) Clean Water Act Section 401 certification, or demonstrating compliance with state water quality standards (typically by presenting a letter prepared for the application from the state confirming

the facility is meeting water quality standards). Second, a facility must demonstrate that it has not contributed to a state finding that the river has impaired water quality under Clean Water Act Section 303(d) (relating to water quality limited streams).

The Westfield River in the vicinity of the Woronoco Project was classified by the MADEP, Division of Water Pollution Control, as Class B Warmwater Fishery and Recreation waters at the time of relicensing (2002), as noted in the Environmental Assessment prepared for the Project. It remains as Class B waters today. Class B waters are designated as a habitat for fish, other aquatic life, and wildlife, and for primary and secondary contact recreation. According to MADEP, the Woronoco Project is in compliance with all conditions of the Section 401 water quality certificate (WQC) issued to the project after December 31, 1986.

The current MADEP, Division of Watershed Management, Massachusetts Year 2008 Integrated List of Waters, dated December 2008, lists the following "impairment issues" for the following sections of the main stem of the Westfield River:

- Confluence of Drowned Land Brook and Center Brook in Savoy to confluence with Middle Branch Westfield River, Huntington for Pathogens
- Confluence with Middle Branch Westfield River, Huntington to Route 20 Bridge, Westfield for taste, odor, color, noxious aquatic plants and turbidity

The Woronoco Project is located within the second segment of river listed above. The Massachusetts Year 2008 Integrated List of Waters denotes "cause unknown" in its listing for this section of the river, but MADEP does not believe the Woronoco facility is a cause of these impairments. Consultation with Robert Kubit of the MADEP indicated that in general, the run-of-river operation of the Woronoco Project likely has net positive effects on the quality of the water by maintaining circulation, mixing and aeration of the water.

B. Water Quality – The Facility is in Compliance with all conditions issued pursuant to a Clean Water Act §401 in the Facility area and in the downstream reach. The reach of the river upstream, at and downstream of the facility is identified by the state as not meeting

water quality standards (including narrative and numeric criteria and designated uses) pursuant to Section 303(d) of the Clean Water Act. There has been a determination that the Facility is not a cause of the violation - FACILITY PASSES

2.3 Criteria C - Fish Passage and Protection:

***Goal:** The facility provides effective fish passage for riverine, anadromous and catadromous fish, and also protects fish from entrainment.*

***Standard:** For riverine, anadromous, and catadromous fish, a facility must be in compliance with recent (after 1986) mandatory prescriptions regarding fish passage (such as a Fish and Wildlife Service prescription for a fish ladder) as well as any recent resource agency recommendations regarding fish protection (e.g., a tailrace barrier). If anadromous or catadromous fish historically passed through the facility area but are no longer present, the applicant must show that the fish are not extirpated or extinct in the area because of the facility and that the facility has made a legally binding commitment to provide any future fish passage recommended by a resource agency.*

When no recent fish passage prescription exists for anadromous or catadromous fish, and the fish are still present in the area, the facility must demonstrate either that there was a recent decision that fish passage is not necessary for a valid environmental reason, that existing fish passage survival rates at the facility are greater than 95% over 80% of the run, or provide a letter prepared for the application from the U.S. Fish and Wildlife Service or the National Marine Fisheries Service confirming the existing passage is appropriately protective.

If a Mandatory Fish Passage Prescription for Riverine fish has been issued for the Facility, the Applicant must demonstrate that the Facility is in Compliance with the Prescription. For Riverine, anadromous and catadromous fish, a Facility must also be in compliance with recent Resource Agency Recommendations regarding fish protection.

The FERC license issued in 2002 required preparation of a comprehensive fish passage plan with provisions to install, operate, maintain, and evaluate as appropriate, upstream and downstream passage facilities for Atlantic Salmon and American Eel. Resource agency consultation was required for the various phases of study and plan components. Article 405 also reserved Section 18 FPA prescription authority for the USF&WS. The applicant's proposals to complete these requirements were modified several times, and numerous extensions were requested and subsequently approved by the FERC for the comprehensive plan or components of it (see 1.3 Regulatory History). FERC reported in their Order dated January 11, 2010 (see Appendix B) that required consultation with resource agencies has not been consistently obtained. This letter identified Woronoco Hydro, LLC as being in violation of the requirements of Article 404 of the Project license, and subject to the license being revoked.

Since receipt of the FERC January 11, 2010 letter, a number of studies, facility modifications, resource agency consultations and filings have been made by Woronoco to satisfy the requirements of Article 404 of their license. Specifically in response to FERC's Order dated January 11, 2010, Woronoco responded with a detailed filing on January 22, 2010 which included changes (based in part from resource agency comments) from plans submitted earlier to FERC. FERC's Order of March 1, 2010 (see Appendix B) responding to this filing, approves a number of the submissions and revised schedule for the remaining outstanding studies, and specifically directs the licensee to incorporate recommendations identified by the USF&WS, MDF&W, and Trout Unlimited (TU) on future activities. In May 2010, Woronoco elected to expedite their 2010 downstream fish passage installation and 2011 effectiveness testing, and after consultation with USF&WS, MDF&W, MADEP and Trout Unlimited (TU), submitted a revised schedule to FERC for completion of the outstanding fish passage and protection measures. This schedule, adopted by FERC in their Order dated June 30, 2010, along with the actual completion dates of the activities, is noted below. Items in *italics* have been addressed to the satisfaction of FERC and the resource agencies. Items in **bold** have not yet been completed. Discussion of key items follow the table below.

Action	Target Date	Completion Date
<i>Downstream fish passage construction</i>	5/20/10	5/20/10
Perform intake velocity testing	5/20/10	5/20/10
Draft intake velocity report to agencies	6/4/10	6/3/10
Final intake velocity report to FERC	7/6/10	9/16/10
Draft downstream smolt passage Study Plan to agencies	4/28/10	4/28/10
Final downstream smolt passage Study Plan to FERC	6/4/10	6/4/10
Perform downstream smolt passage study	May-June 2010	May-June 2010
Draft downstream smolt passage report to agencies	6/15/10	7/15/10
Final downstream smolt passage report to FERC*	9/15/10	9/15/10
<i>Draft Operation and Maintenance Plan to agencies</i>	7/15/10	7/15/10
<i>Final Operations and Maintenance Plan to FERC</i>	9/15/10	9/16/10 revised November 2010
<i>Downstream adult eel passage study plan</i>	June 2010	Postponed to 2011
<i>Install upstream eel passage at north dam</i>	July 2010	July 2010
Monitor downstream eel passage	September 2010	Postponed to 2011
Perform Phase 2 upstream eel passage study	Aug/Oct 2010	Aug/Sept 2010
Draft Phase 2 upstream eel passage rpt to agencies	12/31/10	
Final Phase 2 upstream eel passage rpt to FERC	1/28/11	

* Re-testing is required in 2011 to confirm effectiveness following station modifications.

Intake Velocity Testing

The required velocity testing at the project intake was conducted on May 20, 2010 and results provided to the resource agencies for comment prior to FERC submission. Velocities were found suitable for smolt but exceeded preferred approach rates for migrating adult eels. Replacement of an oversized bridge beam, which was theorized by Woronoco as causing the bending of flows and reduction of the area through which flows entered the penstock, was implemented in the October of 2010. Woronoco believes this modification will reduce the high flow rates found at the penstock intake, and enhance the effectiveness of the downstream passage of smolt. Woronoco committed to conduct additional velocity testing following this modification in the

Conclusions section of their 2010 Fish Passage Effectiveness Test Results Report issued to FERC on September 15, 2010 .

Downstream Fish Passage

Woronoco filed its Downstream Fish Passage Study Plan to FERC on June 4th. While the accelerated schedule for downstream smolt passage to 2010 was acceptable to the agencies as it would potentially expedite the overall fish passage program progress, the agencies cautioned that low spring flows that would be occurring during the expedited, late spring test period meant that downstream effectiveness during full generation capacity flows would not be tested. USF&WS identified the probable need for additional testing in 2011 if, in fact, limited flows occurred during testing. (See letter dated May 13, 2010 in Appendix B). They also expressed concern over planned testing at bypass flows under 35 cfs without first receiving approval by resource agencies that the bypass was effective at 35 cfs. The Plan was approved by FERC's Order dated June 30, 2010 with the requirement to "fully address any agency comments on supplementing or repeating the study at a later date, and if appropriate, include a schedule for performing the additional work and providing draft and final study plans and study reports to the agencies and FERC". A copy of this Order is included in Appendix B.

Downstream effectiveness testing for Atlantic salmon, but not American eel, was implemented in May and June of 2010. A draft of the report was issued for resource agency and TU comment. A final report was submitted to FERC on September 15, 2010, including a copy of comments received from the reviewing parties. Analysis of the telemetry data by TU produced different assessment results than that calculated by Woronoco as shown in the table below. USF&WS, MDF&W and TU all commented that regardless of the values used, both the effectiveness of the fish passage and turbine survival rates are low. Follow-up consultation with MDF&W on December 6th and with USF&WS on December 10th, both clarified that the results of the 2010 testing did not demonstrate safe and effective passage for smolt, and stated that additional testing in 2011 would be required.

<u>Factor</u>	<u>Woronoco</u>	<u>TU</u>
Bypass efficiency	79%	69.1%
Survival past the project	91%	70.9%
Turbine entrainment survival	58%	53.3%

In its letter to FERC on September 15, 2010, Woronoco provided their position as to why several comments by the agencies and TU were not adopted or believed justified, and committed to alternative solutions. (Appendix B contains a copy of this filing. Note it is erroneously dated for 2009 rather than 2010). Key issues are summarized below:

- Rather than deepening the plunge pool depth as Woronoco did not believe the pool to be the cause of mortality, Woronoco adjusted the discharge plume and removed some rock ledge theorized to be injuring the fish.
- Rather than re-test in 2011 at full generation flows and high trash conditions, Woronoco committed to reduce generation to the flow levels tested. Re-testing would be done if an increase to full generation capacity is desired.
- Woronoco's position is that they have satisfied their responsibilities under their FERC license and that additional fish passage effectiveness testing is not required. While higher efficiency values may be desired by the agencies, other New England facilities having similar or lower values have been found to be acceptable by FERC in part because no further operational or facility modifications would likely enhance passage efficiency. Woronoco contends that recent modifications made to minimize entrainment will result in increased passage efficiency. They have committed to conduct voluntary effectiveness testing in 2011 simultaneous with similar testing scheduled for their upstream Indian River Project.

The above-noted position put forward by Woronoco in Fall 2010 does not appear to comply with the requirements in the June 30, 2010 FERC Order to fully addresses all agency comments, including repeating of the effectiveness testing, if required, nor with the recommendations of MDF&W or USF&WS. However subsequent discussions between LIHI and Woronoco representatives indicate that Woronoco will now agree to perform additional downstream

effectiveness testing for Atlantic salmon in 2011, if required by LIHI as a condition of certification and as requested by the agencies, in order to demonstrate effective downstream passage of Atlantic salmon as a condition of certification.

Downstream Adult Eel Passage

The downstream adult American eel passage study plan was incorporated into the Comprehensive Fish Passage Plan submitted to FERC, including agency comments, on 1/22/10. As noted in the Plan, there is agreed-upon uncertainty with respect to whether adult eels occur upstream of the facility at this time. The plan called for use of existing passage opportunities including spill, passage through deep discharge gates (which are partially opened to release minimum flows), the current and new fish bypass systems. An automated trash rake system was installed in Fall 2010.

Regarding effectiveness testing, and to confirm the presence of out-migrant adult eels, Woronoco proposed to install an on-site capture mechanism (live box) in 2010 to monitor outmigration of adult eels by capturing them after passage in the plunge pool of the bypass facility. The live box would have been monitored daily, along with visual monitoring for the presence of migrating eels at the intake and new downstream fishway, as a quantitative assessment of the downstream eel protection effectiveness. However, the installation of an automated trash rake system in the fall of 2010 required dewatering at the Project, which prohibited this monitoring in 2010, and was re-scheduled for 2011. Consultation with Caleb Slater (MDF&W), John Warner (USF&WS) and Don Pugh (TU) confirmed that this delay was not problematic.

Upstream Eel Passage

Initial upstream eel passage was conducted in 2009 for the South and Middle ladders. Replacement of the damaged North ladder had not yet occurred. As noted in FERC's letter dated August 17, 2010 (see Appendix B), the resource agencies acknowledged the increased performance over past years likely due to improved water supply to the ladders. USF&WS acknowledged that the 2009 studies showed that "eels could effectively navigate the eelways". USF&WS, MDF&W and TU all recommended Phase 2 studies to be conducted at the existing

ladders as well as the new North ladder. Although Woronoco did not concur that additional monitoring is required, they agreed to do the studies in 2010 employing methods recommended by the agencies, including release of three sets of eels as suggested by USF&WS. These studies were completed in August 2010. A copy of the data has been submitted to the agencies, and the draft report is on schedule for submission in December 2010. Discussion with Mr. Peter Clark, of Woronoco, indicated that almost all of the eels utilized the south ladder, and none used the middle ladder.

Criteria Conclusion

In the last year, Woronoco has demonstrated significantly improved attention and efforts to resolving outstanding fish passage issues in a timely manner. My assessment is that all currently required fish passage and entrainment equipment or operations measures specified in the FERC license and recommended by the MDF&W and USF&WS have now finally been installed, as well as additional passage modifications made on the recommendation of Woronoco's fish passage engineering consultant as a result of problems revealed in the 2010 downstream effectiveness testing for Atlantic salmon (modifying the intake velocities and deepening of the plunge pool). As yet, however, final effectiveness of these measures for both Atlantic salmon and American eel has not yet been demonstrated conclusively by Woronoco to the satisfaction of state and federal resource agencies and Trout Unlimited (which has been actively monitoring this effectiveness). Given that, another year of testing for Atlantic salmon, and an initial year of testing for American eel, is being sought by the resource agencies. As noted in section 3.0 *Recommendation*, I am recommending conditions for certification to address these issues that will ensure that if Woronoco's representations regarding effective downstream passage for either species is not achieved by Fall 2011, LIHI reserves the right to either suspend or terminate its certification.

C. Fish Passage and Protection – A Mandatory Fish Passage Prescription under FPA Section 18 has not been issued for the facility, but all agency-requested upstream and downstream fish passage measures have been installed. For American eel, the one species of anadromous or catadromous fish found by the agencies to be requiring upstream

passage now, the applicant has demonstrated to the satisfaction of federal and state resource agencies that American eel are effectively passing upstream and that the facility is appropriately protective of the eel resource. Regarding downstream passage effectiveness, it is expected that by Fall 2011 the facility will have demonstrated through methods satisfactory to the resource agencies that it is achieving downstream fish passage survival rates for Atlantic salmon and American eel that meet LIHI criteria and are appropriately protective of the fishery resource. Should such a demonstration not be able to be made, LIHI should reserve the right to either suspend or terminate the certification.

FACILITY CONDITIONALLY PASSES.

2.4 Criteria D - Watershed Protection:

Goal: Sufficient action has been taken to protect, mitigate and enhance environmental conditions in the watershed.

Standard: A certified facility must be in compliance with resource agency recommendations and FERC license terms regarding watershed protection, mitigation or enhancement. These may cover issues such as shoreline buffer zones, wildlife habitat protection, wetlands protection, erosion control, etc. The Watershed Protection Criterion was substantially revised in 2004. The revised criterion is designed to reward projects with an extra three years of certification that have: a buffer zone extending 200 feet from the high water mark; or, an approved watershed enhancement fund that could achieve within the project's watershed the ecological and recreational equivalent of land protection in D.I. and has the agreement of appropriate stakeholders and state and federal resource agencies. A Facility can pass this criterion, but not receive extra years of certification, if it is in compliance with both state and federal resource agencies' recommendations in a license-approved shoreland management plan regarding protection, mitigation or enhancement of shorelands surrounding the project.

There is no designated buffer zone around the impoundment. The applicant has reported that there are no residences within 200 ft of the impoundment, although there is a public road, bridge and railroad track. There is no watershed enhancement fund established that would achieve ecological and recreational equivalent of land protection. There is no settlement agreement with applicable stakeholders or Resource Agency recommendation identifying the need for a conservation plan for either a shoreland buffer zone or equivalent watershed land. Woronoco has identified they hold river bank land that could be transferred to an appropriate non-profit organization for conservation purposes, and that they are an active member of the Westfield River Watershed Association. .

Shoreland protection is secured through compliance with the State issued 401 WQC for the project, conditions of which are designed to provide reasonable assurance that the Project or activity will be conducted in a manner which will not violate applicable water quality standards and will minimize impact on waters and wetlands. Adherence to headpond level limits is particularly important to this assurance to ensure that emergent wetland areas are not stressed, as noted in the Environmental Assessment (EA) prepared by FERC in 2002. The project is operated to minimize fluctuations to within one inch of its licensed elevation of 229.0 feet National Geodetic Vertical Datum (NGVD). The reservoir level is measured through a electronic pressure transducer located in a sheltered area unaffected by flows upstream of the intake rack structure and forebay stoplog structure. Woronoco has reported that no drawdowns have taken place since the December 2001 - January 2002 installation of the "stoplog" gate structure that allows work in the intake area without the need to lower the impoundment. Annual drawdowns previously conducted by IP are no longer required for maintenance activities.

D. Watershed Protection – The Facility is in compliance with state and federal resource agencies recommendations in a license approved shoreland management plan regarding protection, mitigation or enhancement of shorelands surrounding the project.
FACILITY PASSES.

2.5 Criteria E - Threatened and Endangered Species Protection:

Goal: The facility does not negatively impact state or federal threatened or endangered species.

Standard: For threatened and endangered species present in the facility area, the facility owner/operator must either demonstrate that the facility does not negatively affect the species, or demonstrate compliance with the species recovery plan and any requirements for authority to “take” (damage) the species under federal or state laws.

The 2002 Environmental Assessment (EA) prepared by FERC for the Woronoco Project states that no federally or state listed endangered or threatened species are known to exist in the vicinity of the Woronoco Project. The EA reported that the creeper or squawfoot mussel (*Strophitus undulates*), a State-listed Species of Concern, was found in both the impoundment and bypass reach. However, the bypass is not believed to support a permanent benthic population due to scouring or disruption from high flows. A survey conducted pursuant to a planned impoundment drawdown in 2001 found both the creeper mussel and triangle footer (*Alasmidonta undulata*), another State-listed Species of Concern, in the impoundment: These species remain classified as Species of Concern by the Massachusetts Natural Heritage & Endangered Species Program (NHESP) in 2010. There are no Recovery Plans for these species.

Consultation with the NHESP in March 2010 confirmed that no additional protected species are believed to inhabit the area of the Project.

Both the FERC licenses and WQC require minimization of impoundment drawdown frequency, length of drawdown time, notification to MADEP prior to the drawdown and implementation of the approved Standard Operating Procedures for Relocation of Freshwater Mussels in the Project Impoundment prior to any drawdown. A report on the results of the relocation activities are submitted to the NHESP. The final Standard Operating Procedure was approved by the FERC on July 27, 2004.

On August 6 and 7, 2001, a drawdown of the impoundment was implemented following issuance of a Notice to the NHESP, but before responding to questions raised by the NHESP in a letter

dated August 1, 2001. The NHESP issued a Cease and Desist Order. In a letter dated September 24, 2001, Swift River Hydro Operations Company, operator for Woronoco Hydro LLC, claimed that the August 1st letter was not received until after the drawdown was completed. A mussel relocation procedure recommended by the USF&WS was reportedly implemented as the drawdown took place, including development of a report on the mussels found and relocated. The September 24th letter provided data in response to the questions raised in the NHESP letter of August 1, 2001. It also identified the need to have a second drawdown that fall. In a letter dated October 2, 2001, the NHESP issued the opinion that, based on information provided by Woronoco, the fall drawdown should have no affect on the habitat of the two mussel species.

Since January 2002, Woronoco has reported that only one short-term (a few hours) drawdown has taken place due to the installation of the "stoplog" gate structure that allows work in the intake area without the need to lower the impoundment. As a result of the significant reduction in drawdown frequency, the Project is in compliance with these requirements.

The WQC also lists the need for a fish stranding recovery plan. Based on consultation with Mr. P. Clark in March 2010, one has not been prepared as no agency has made a specific request for it. He reported that no pools where fish could be stranded are formed due to the shallow gradient of the river bed. Lowering of the impoundment at the Indian River Project in 2009 did not result in any fish stranding.

**E. Threatened and Endangered Species Protection – There are no threatened or endangered species or their critical habitat listed under state or federal Endangered Species Acts present in the Facility area. Procedures exist to minimize impacts to two state listed Species of Special Concern should lowering of the impoundment be necessary.
FACILITY PASSES**

2.6 Criteria F - Cultural Resource Protection:

Goal: *The facility does not inappropriately impact cultural resources.*

Standard: *Cultural resources must be protected either through compliance with FERC license provisions, or, if the project is not FERC regulated, through development of a plan approved by the relevant state, federal, or tribal agency.*

The first dam at project the site was a timber-crib structure constructed in 1879. The existing hydro station was completed in 1913 to supply two paper mills. The two existing dams were constructed in 1938 and 1950 to replace the former structures. The project powerhouse and the Strathmore Mill complex are eligible for inclusion in the National Register of Historic Places.

In letters dated May 2, 1997 and May 18, 1999, the Massachusetts State Historic Preservation Office stated that the Project and planned operations will have no adverse affect on the powerhouse or Strathmore Mill complex. Nonetheless, per recommendation of the Massachusetts SHPO, the FERC license requires consultation with the SHPO prior to conducting any ground disturbance and before engaging in any activity that may result in alteration of listed facilities.

No such activities have been undertaken based on consultation with Mr. Peter Clark, of Woronoco. An inquiry to the SHPO was submitted on March 2, 2010. No response was received as of January 16, 2011.

<p>F. Cultural Resources – The Facility is in Compliance with all requirements regarding Cultural Resource protection, mitigation or enhancement included in the FERC license - FACILITY PASSES.</p>

2.7 Criteria G - Recreation:

Goal: *The facility provides free access to the water and accommodates recreational activities on the public's river.*

Standard: *A certified facility must be in compliance with terms of its FERC license or exemption related to recreational access, accommodation and facilities. If not FERC-regulated, a facility*

must be in compliance with similar requirements as recommended by resource agencies. A certified facility must also provide the public access to water without fee or charge.

Article 408 of the FERC license requires development of a recreational enhancement plan and installation of five specified facilities. Following distribution of a draft plan to the Town of Russell, Westfield River Wildwater Races, Trout Unlimited, WRWA, USF&WS, MDEP, MDF&W, and the MDCR, no comments were received from any of these entities, and the final recreation plan for the Woronoco Project was approved on March 3, 2005. The five recreational facilities that have been installed by the applicant are:

- a put-in/take out for canoes and small, non-motorized boats, to be located at the southwest portion of the impoundment near US Route 20, including an adjacent parking area for up to 15 vehicles;
- a take-out area for canoes, located directly upstream of the projects' two dams, on the impoundment's southeast shoreline;
- a canoe portage path, which includes designated rest stops, racks, and signs directing persons to the downstream put-in;
- a put-in area along the east shoreline of the Westfield River, a short distance downstream from the project powerhouse, for canoeists and persons with hand-carried boats; and
- a parking area located near Bridge Street for approximately 15 vehicles with an associated trail for persons with canoes and hand-carried boats who desire to access the Westfield River downstream of the project powerhouse.

These five facilities were installed in 2003 and 2004. A report issued by FERC in May 2009 indicated that some signage advising the public of the availability of recreational features at the site and certain warning signs had not been installed at that time. A follow-up FERC inspection

on September 29, 2010 found that all signs have been installed and that installation of all recreational enhancements were complete.

Woronoco's application reports that free public access is provided to the shoreline of the Project across owned lands where project facilities, hazardous areas and easements do not preclude access. This access is stated to include the Strathmore Park and recreation area owned by the Town of Russell that uses the impoundment for fishing, boating and swimming.

G. Recreation – The Facility is in Compliance with all requirements regarding Recreation protection, mitigation or enhancement included in the FERC license and allow access to the reservoir and downstream reaches without fees or charges - FACILITY PASSES

2.8 Criteria H - Facilities Recommended for Removal:

Goal: To avoid encouraging the retention of facilities which have been considered for removal due to their environmental impacts.

Standard: If a resource agency has recommended removal of a dam associated with the facility, certification is not allowed.

No resource agency has recommended removal of either of the dams associated with the Woronoco Project.

H. Facilities Recommended for Removal – There are no Resource Agency Recommendations for removal of the dam associated with the Facility - FACILITY PASSES.

3.0 RECOMMENDATION

I believe that the Woronoco Project is currently in full compliance with seven of the eight certification criteria, and likely, but not certainly, is in compliance with LIHI's fish passage and protection requirements, with final demonstration of effective downstream passage for Atlantic salmon and American eel to be conclusively known in 2011.

Therefore, I recommend that the Woronoco Project receive LIHI certification. However this certification should be conditioned, as set forth below, upon the applicant in 2011 commencing and completing, on a pre-established schedule and using pre-approved methods and sample sizes, downstream fish passage effectiveness testing for at its facility for Atlantic salmon and American eel, and demonstrating to LIHI from the results of that effectiveness testing that the downstream fish passage measures in place at the facility are appropriately protective of the Atlantic salmon and American eel that are attempting to move through the facility area.

To this end, the applicant shall file with LIHI:

I. By March 31, 2011:

A. A copy of a *Final 2011 Downstream Fish Passage Effectiveness Testing Plan for Atlantic Salmon and American Eel*, containing, *inter alia*, the methodology, sample size, frequency of testing, and schedule for staging, testing, data sharing, data analysis, final reporting of results, and agency comments on those results;

B. Evidence that the Massachusetts Division of Fisheries and Wildlife and the U.S. Fish and Wildlife Service are of the opinion that this *Final 2011 Downstream Fish Passage Effectiveness Testing Plan for Atlantic Salmon and American Eel*, if implemented according to the Plan, will be sufficient to allow these agencies to determine whether the downstream fish passage measures at the Woronoco facility are appropriately protective of Atlantic salmon and American eel passing downstream; and

C. A proposed schedule under which the applicant will report to LIHI and the resource agencies on a regular basis as to the progress of the effectiveness testing, analysis and evaluation as set forth in the *Final 2011 Downstream Fish Passage Effectiveness Testing Plan for Atlantic Salmon and American Eel*. LIHI reserves the right to add to or amend the applicant's proposed schedule should it conclude that doing so is necessary for LIHI to make timely determinations regarding the applicant's compliance with these certification conditions.

II. Thereafter, and pursuant to the schedule set forth in I.C. above:

Applicant-generated reports with LIHI that (1) document the progress and then the completion of its downstream effectiveness testing, (2) provide the results therefrom, and (3) demonstrate that the downstream fish passage measures at the Woronoco facility are appropriately protective of Atlantic salmon and American eel passing downstream.

LIHI reserves the right to terminate this certification should it conclude either that the testing plan is not adequate, is not being followed, or that the results of testing plan demonstrate that the existing downstream fish passage measures at the facility are not appropriately protective of Atlantic salmon and American eel that are, or soon may be attempting to move through the facility area.

4.0 RECORD OF COMMUNICATIONS

This section documents the contacts made with resource agencies and the applicant during the review of this application. A summary of the comments are included. Where the communications were written, those documents are contained in Appendix C.

Date of Communication	Emails on 2/24/10; and 3/02/10. Responses on 3/10/10, 3/16/10, 3/18/10, 11/30/10 & 12/3/10
Application Reviewer	Patricia McIlvaine
Person Contacted	Mr. Peter Clark, Manager Beth Whalley, Assistant Woronoco Hydro LLC
Telephone and/or email address	978-468-3999 pclark@swiftriverhydro.com

March: Appendix B contains a copy of emails sent to and received from P. Clark. Key responses note that that a verbal report following the fall 2001 impoundment drawdown was found acceptable by the agencies since only one or two mussels was found. Mussels relocated during the first drawdown appear to have remained in the relocation area. Mr. Clark reported that no fish stranding plan has been created for the Woronoco Project as none has been requested. The recreational facilities are complete except for some signage which will be installed once boat access to the river is safe, and before the annual canoe race on the river. The Woronoco canoe put-in area upstream of the boat barrier is the "end of race" take-out area. Ms. Walley forwarded copies of annual compliance reports on 3/16 and 3/18/10. Reports for 2005 and 2006 could not be located in their files.

December: Follow-up conversations were held with Mr. Clark. He also provided copies of filings regarding 2010 project activities. He confirmed that the 2010 upstream eel passage monitoring data has been provided to the resource agencies and that the draft report is expected to be on-time for December issuance. He reported that about 99% of the eels utilized the south ladder with the remaining using the new north ladder. He reported that due to the fact that adult eels have not been observed in the project area, that the delay in monitoring for their downstream passage due to the dewatering of the area needed for installation of the automated Trash rake system was found acceptable to the agencies.

Date of Communication	Telephone call on 3/02/10. Follow-up email on 3/02/10 Discussion on 3/09/10
Application Reviewer	Patricia McIlvaine
Person Contacted	Mr. Robert Kubit, Engineer MADEP, Div of Water Quality
Telephone and/or email address	508-767-2854 Robert.kubit@state.ma.us
<p>In our telephone call of Feb. 24, 2010, in response to my general questions regarding the history of the Woronoco project on water quality in the area, and any known concerns, Mr. Kubit stated that in general, the project likely has a net positive impact on water quality. This is due to the flows through the project which help maintain water circulation, mixing and aeration. The run-of-river operation of Woronoco should minimize scouring potential that is found at peaking stations. He stated he believes that the project, like most dams, do have negative impacts on fisheries and their habitat, but that he understood those issues are being addressed by the federal and state fish and wildlife agencies. We briefly discussed the criteria used by LIHI to determine "low impact". I forwarded him a copy of the criteria as he stated he was having a problem viewing them from the website. He stated he believed LIHI's criteria should be more stringent than complying with license conditions and resource agency recommendations made at the time of licensing. His opinion is that if the Water Quality Certificate for this project were issued today, the requirements would be more protective of environmental issues than the current certificate does for the project. Mr. Kubit stated that he still hoped to submit comments to LIHI on Woronoco's certification application. He also stated he supports any comments issued by the MA Fish & Wildlife Service.</p> <p>In a follow-up call on March 9, 2010, Mr. Kubit reported that he has never received any notifications for the Woronoco Project regarding deviations from their minimum flow or headpond level limits. He suggested that I contact Mr. Robert McCollum at the Springfield Regional Enforcement office. In response to my inquiry, Mr. Kubit stated that the WQC was never re-issued in the name of Woronoco Hydro LLC as that was not the process in place at the time. However, the conditions are still applicable as the Certificate applies to the facility and that the same conditions were incorporated into the license issued by the FERC.</p>	

Date of Communication	Email on 03/02/10. Response on 03/10/10
Application Reviewer	Patricia McIlvaine
Person Contacted	Mr. Henry Woolsey, Program Manager MA National Heritage and Endangered Species Program
Telephone and/or email address	508-389-6354 Henry.woolsey@state.ma.us
In an email received from Emily Holt of NHESP, she reported that the NHESP has not been notified regarding any impoundment drawdown since 2001. Although the NHESP has a new relocation protocol, she stated the one for Woronoco 2001 is similar. NHESP will not be submitting written comments on this application. Comments provided by C. Slater represent the Division of Fish & Wildlife. Ms. Holts email did not state whether or not this new mussel relocation protocol has been or will be proactively provided to Woronoco.	

Date of Communication	Email and letter submitted 03/02/10 No response received as of March 30, 2010
Application Reviewer	Patricia McIlvaine
Person Contacted	Ms. Brona Simon, SHPO MA Historical Commission
Telephone and/or email address	Brona.simon@state.ma.us
I received an email response on 3/02/10 asking that I forward my questions by letter as no responses are made to telephone or email inquiries. The letter sent to the MA Historic Commission is contained in Appendix C.	

Date of Communication	Initial telephone calls on 03/02/10; 03/11/10, 3/15/10.
Application Reviewer	Patricia McIlvaine
Person Contacted	Tom O'Brien, Chair Russell Conservation Commission
Telephone and/or email address	413-862-3868
No response has been received to date.	

Date of Communication	Initial telephone call on 03/02/10. Discussion on 03/11/10
Application Reviewer	Patricia McIlvaine
Person Contacted	Mr. Illyd Fernandez Russell Recreation Commission
Telephone and/or email address	413-862-4747
<p>Mr. Fernandez stated he has never contacted Woronoco Hydro LLC or Swift River Hydro Operations Company (Swift River) regarding public access/use of the reservoir. He is also not aware of any contact made to the town encouraging public recreational use by Woronoco or Swift River. He joined the recreational committee in the 2003/2004 timeframe. He is not familiar with a Town Park at the reservoir. He suggested contacting the Russell Conservation Committee (Bill Hardy) and possibly Mr. Jeff DeFeo of Westfield River Wildwater Races for more insight.</p>	

Date of Communication	Initial telephone calls on 03/09/10; 3/15/10 Response on 3/18/19
Application Reviewer	Patricia McIlvaine
Person Contacted	Mr. Robert McCollum MADEP, Div of Water Quality Springfield Regional Enforcement Office
Telephone and/or email address	413-755-2138
<p>At the suggestion of Mr. Kubit, I contacted Mr. McCollum to see if his office has ever received any notifications for the Woronoco Project regarding deviations from their minimum flow or headpond level limits. Mr. McCollum reported that no such notices were ever received for the Woronoco Project.</p>	

Date of Communication	Initial telephone call on 03/15/10. Discussion on 3/18/10
Application Reviewer	Patricia McIlvaine
Person Contacted	Mr. Defeo Westfield River Canoe Club
Telephone and/or email address	413-354-9684
<p>Mr. Defeo reported that Swift River has been very accommodating in the use of their facilities for recreational use of the reservoir. He stated that they have even installed the boat barriers earlier than they need for license compliance to help ensure safety of individuals who practice in the river upstream of the dam in the weeks prior to the annual race which ends in the project reservoir.</p>	

Date of Communication	Initial telephone call on 03/04/10. Discussion on 03/11/10 Follow-up calls made 12/6/ and 12/7/10. Discussion on 12/10/10
Application Reviewer	Patricia McIlvaine
Person Contacted	Mr. John Warner USDI, Fish & Wildlife Service New England Field Office
Telephone and/or email address	603-223-2541 x 15
<p><u>March:</u> Mr. Warner informed me that he intends to submit written comments to LIHI addressing his concerns with the project and the application for "low impact" certification. He did not share any specific items, but stated that the FERC letter dated Jan 11, 2010 clearly illustrates the frustration he and other agency personnel responsible for the fisheries protection feel towards the Project. He stated that if he finds he will not be able to submit comments by the LIHI deadline, or if he identifies other issues not captured by his written comments, that he will call me to discuss his concerns.</p> <p><u>December:</u> The USF&WS has not issued a FPA Section 18 mandatory fish passage for the Woronoco Project. However John is in support of the fish and eel passage facilities that have been required to date at the Project through past consultation and as required via the FERC license.</p> <p>Regarding the downstream fish (smolt) passage studies performed this year, he stated:</p> <ul style="list-style-type: none"> ▪ he is not satisfied with a passage value of approximately 70%. He does not believe this shows "successful and safe passage" ▪ he is unhappy with the "late in the season" scheduling of the 2010 test. He had advised P. Clark of this concern when P. Clark first informed John of the plan to move the testing up to 2010 (i.e. would likely miss the "full generation" flows) and in fact, the 2010 tests did miss these flows. ▪ he is concerned about the number of smolt entrained. A ¾ inch screen should have prevented such entrainment problems. He is aware that Woronoco made adjustments at the facility (replacement of the support beam and closing of some large spaces where the screen connects) which Woronoco feels caused the entrainment issues. ▪ he strongly feels another round of testing following the approved protocols is needed to confirm that the facility modifications did in fact work and appropriate (full generation) flows would be tested. Only then, could the USF&WS pass judgment as to whether or not the fish passage is effective in achieving safe passage. He stated he informed P. Clark of this position. <p>When I asked about the information in Woronoco's issuance of the test results to FERC on Sept 15, 2010 (letter dated Sept 15, 2009) suggesting "voluntary testing" and "testing coincident with Indian River" John stated he had not seen the letter but would review it and get back to me if he has any additional concerns, as in some cases in the past, deviations from what he believed were verbal agreements have occurred on this Project. He reiterated that proper testing following the</p>	

established protocols is required.

On the upstream eel passage activities, John is pleased with these results. He also has no problem with the delay in testing of downstream eel passage until 2011.

Date of Communication	Telephone call on 12/06/10.
Application Reviewer	Patricia McIlvaine
Person Contacted	Mr. Donald Pugh Trout Unlimited
Telephone and/or email address	413-863-3832

The purpose of my call was to confirm my understanding of his concerns regarding the downstream fish passage activities, downstream eel passage and Phase 2 upstream eel passage data. Mr. Pugh stated that he did not think that delay of the downstream eel passage monitoring to 2011 would be a concern as adult eels are not very common in the river, but suggested I discuss the issue with Mr. John Warner. He stated he has a potential source for adult eels to be used in 2011 testing. He also acknowledged that the data provided for the 2010 Phase 2 upstream eel passage testing showed very positive results. He was disappointed with the results of the downstream fish passage study. He felt that the commitment to not generate at flows above what was tested would still result in too many fish being entrained or unsuccessfully passed downstream. He thought re-testing following the improvements made to the facility's intake is needed to get a better idea of passage effectiveness. He stated that the ¾ inch spacing on the trash racks is standard in the US, and was not sure of what other changes could be made to minimize entrainment other than installation of angled racks, which would be very expensive. He is not aware of the implants used in test fish as causing injury based on many similar studies being done in the past. Regarding what would be a reasonable effectiveness goal, he stated 85-90% would be desirable. However he acknowledged that he has never seen target goals being identified in the study plan with the exception of one large project in PA.

Date of Communication	Telephone call on 12/06/10.
Application Reviewer	Patricia McIlvaine
Person Contacted	Mr. Caleb Slater MA Division of Fisheries and Wildlife
Telephone and/or email address	508-389-6300 x 6331
<p>The purpose of my call was to confirm my understanding of his concerns regarding the downstream fish passage activities, downstream eel passage and Phase 2 upstream eel passage data. Mr. Slater confirmed that delay of the downstream eel passage monitoring to 2011 was discussed and is not a concern as adult eels are not very common in the river, and that findings adults in sufficient numbers would be difficult. He also acknowledged that the data provided for the 2010 Phase 2 upstream eel passage testing showed very positive results. He stated he was impressed by the number of eels which successfully used the ladders. His key concern is the downstream fish passage program. He has concerns about the performance of the 2010 test, as well as the actual effectiveness of the passage facilities. His concerns with the 2010 test was that it was performed too late in the season, resulting in insufficient flows to test the full generation capacity of the units; the high number of fish entrained indicates problems at the intake (although he acknowledged that the new ¾ inch trash racks are appropriately sized), but also produces incomplete testing of the fish passage structure; and the large number of smolt that remained in the bypass indicates probable injury or mortality, thus lowering the true number of fish that succeeded in passing the facility "unharmred". He also stated that an effectiveness value of 71% does not represent safe and effective fish passage. When I asked what % he thought was appropriate, he stated that the goal is 100%, although that may not always be reasonable. We discussed the fact that the study plan did not specify a target effectiveness value, and he replied that such goals are never established. Instead, following performance of a properly performed effectiveness test, the fisheries experts would determine if the results found are the "best that can be expected" based on the particular conditions at the site.</p>	

APPENDIX A

CERTIFICATION COMMENT LETTERS



COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENERGY & ENVIRONMENTAL AFFAIRS
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Division of Watershed Management, 627 Main Street 2nd Floor, Worcester, MA 01608

DEVAL L. PATRICK
Governor

TIMOTHY P. MURRAY
Lieutenant Governor

IAN A. BOWLES
Secretary

LAURIE BURT
Commissioner

Mr. Fred Ayer, Executive Director
Low Impact Hydropower Institute
34 Providence Street
Portland ME 04103

March 25, 2010

Re: Woronoco Hydroelectric Project Comments (FERC #2631)
LIHI Certification

Dear Mr. Ayer,

The Massachusetts Department of Environmental Protection (the Department) is the state agency responsible for issuing the 401 Water Quality Certificate for hydroelectric projects. In regard to fish passage and aquatic habitat issues, the Department relies on the expert opinion of the MA Division of Fisheries & Wildlife. Accordingly, the Department concurs with the February 23, 2010 letter from the MA Division of Fisheries & Wildlife (the Division) to the Low Impact Hydropower Institute that states the Division does not support the Woronoco Hydro, LLC application for LIHI certification, at this time, due to its potential adverse impact on migratory fish passage and on riverine habitat upstream of the dam.

The currently installed fish passage facility has not proven to be adequately effective. It is expected effectiveness testing will again be conducted in the spring of 2010 and a new downstream fish passage facility constructed in the summer of 2010.

The applicant has proposed installing 30 inches of flashboards on the dam thus raising impoundment water levels. The Water Quality Certification issued by the Department for this project requires the pond height above the dam be maintained at 229.0 feet. Since adverse effects to wetlands and free flowing habitats are expected should this proposal be implemented, changes to this Water Quality Certification requirement are not anticipated.

According to the Department's Westfield River Watershed 2001 Water Quality Assessment Report, this hydroelectric facility is located in segment MA32-05 and supports the Class B warm water fishery classification. Water quality testing demonstrated a status of support for the Aquatic Life and Aesthetics designated uses. Primary and Secondary Contact Recreational uses were not assessed for this segment of the Westfield River due to limited recent bacterial data.

Please note this office has not been notified of any deviations from minimum flow and head pond level requirements at this project since the new FERC license was issued in 2002.

Thank you for the opportunity to comment on this project. If you have any questions, please call me at 508-767-2854.

Sincerely,

A handwritten signature in black ink, appearing to read 'R. Kubit', with a long horizontal flourish extending to the right.

Robert Kubit, P.E.

Cc: Peter Clark/Woronoco Hydro
Alfred Nash/Renewable Power Consulting
Caleb Slater



MassWildlife

Commonwealth of Massachusetts

Division of Fisheries & Wildlife

Wayne F. MacCallum, *Director*

February 23, 2010

Mr. Fred Ayer, Executive Director
Low Impact Hydropower Institute
34 Providence Street
Portland, ME 04103

Re: Request for Low Impact Hydropower Certification
Woronoco Hydroelectric Project (FERC #2631)

Dear Mr. Ayer,

The Massachusetts Division of Fisheries and Wildlife (Division) is the agency responsible for the protection and management of the fish and wildlife resources of the Commonwealth. As such we monitor operations at hydroelectric projects within the Commonwealth including the Woronoco hydroelectric project (project) owned by Woronoco Hydro LLC (Woronoco). The development is located at river mile 18.5 on the Westfield River in, Russell, Massachusetts and is licensed by the Federal Energy Regulatory Commission (FERC) as Project Number 2631.

DFG is submitting these comments to LIHI in order to fulfill the requirements of the Massachusetts Department of Energy Resources ("DOER") Renewable Energy Portfolio Standard Regulations (225 CMR 14.00; "RPS I" and 225 CMR 15.00; "RPS II"). The RPS I and RPS II regulations were promulgated by DOER on January 1, 2009 and require that any hydroelectric project wishing to qualify as either a RPS I or RPS II generator first obtain LIHI certification. These regulations also require all relevant regulatory agencies to comment on the pending LIHI application.

The Department does not support Woronoco Hydro, LLC's application for LIHI Certification of the Woronoco hydroelectric project at this time, primarily due to its potential adverse impact on migratory fish passage and on riverine habitat upstream of the dam. Our concerns are discussed in greater detail below.

PROJECT

The Woronoco Project is an existing FERC licensed hydropower project. The project has a total rated capacity of 2,700 kilowatts (kW), and an average annual generation of about 6,700 MWh.

The project's principal features are:

1. two non-contiguous dam sections, with a height of about 25 feet above the riverbed, lengths of about 351 feet (south dam) and 307 feet (north dam), a steel sluice gate adjacent to the trashracks, a steel mud gate (north dam), a 655-foot-long earthen dike with a sheet steel core, and a crest elevation of 229.0 feet National Geodetic Vertical Datum (NGVD);
2. a 40-foot-wide by 15-foot-high intake structure, having trashracks with 1.25-inch clear bar spacing, and a 550-foot-long by 11-foot-diameter steel (with concrete liner) penstock;
3. a 59-foot-long by 59-foot-wide concrete and brick powerhouse containing three turbines and generating units, a gross head of 55 feet and a design head of 50 feet at 710 cfs, a total installed capacity of 2,700 kW, and a tailwater elevation of 174.0 feet.

www.masswildlife.org

Division of Fisheries and Wildlife

Field Headquarters, One Rabbit Hill Road, Westborough, MA 01581 (508) 389-6300 Fax (508) 389-6301

An Agency of the Department of Fisheries, Wildlife & Environmental Law Enforcement

4. an interim downstream fish passage facility, constructed in 1998 and located immediately in front of the trashracks with its discharge at the base of the south dam;
5. two upstream eelways (South and Middle channels);
6. a 1.2-mile-long impoundment, with a normal pool elevation of 229.0 feet, a surface area of 43 acres, and negligible usable storage;
7. a bypassed reach, with three channels varying in length from about 200 to about 1,000 feet

The project is licensed to operate the project in a run-of-river mode, by maintaining the impoundment elevation at 229.0 feet, with minimal fluctuations. The project must provide a year-round minimum flow of 57 cfs to the project's bypassed reach, with 22 cfs in the north channel and 35 cfs in the south channel.

AFFECTED RESOURCES

The Westfield River watershed drains an area of 517 square miles and encompasses 24 cities and towns in the counties of Franklin, Hampshire, Hampden, and Berkshire. The watershed is 48 miles long, 20 miles wide and it extends from the Berkshire Mountains to the Connecticut River. It includes 636 miles of rivers and streams and over 4550 acres of lakes and ponds and supports a population of approximately 85,000 people. The watershed is largely forested and sparsely populated, with most of the population concentrated in the southeastern corner of the basin in the cities of Holyoke and Westfield.

Elevations in the Westfield River basin range from 2,300 ft above sea level along the northwestern drainage divide in Windsor to 50 ft above sea level at the confluence of the Westfield and Connecticut Rivers.

The Westfield River flows through steep hills composed of thin, rocky soil. As a result, this river has wildly fluctuating stream flows that range from levels high enough for white water rafting in the spring, to no more than a trickle in some locations during the month of August.

The upper branches of the Westfield River are treasured for their free-flowing state, unencumbered by dams or other man-made obstacles. In fact, the West Branch Westfield River is the largest totally uncontrolled river in the State. The pristine condition of this part of river provides a healthy habitat for native fish and an abundance of other wildlife. It also provides an important recreational resource for the citizens of this state.

Due to the threat of dam construction in the upper reaches of the Westfield River, local groups petitioned the federal government to name sections of the river as part of the National Wild and Scenic River System. The purpose of the National Wild and Scenic River Act is to preserve the character and quality of a river; it does not set a river aside as a wilderness area and preclude all further development along it. It does, however, protect a river and its immediate surroundings from federally funded projects that would negatively impact its water quality, wildlife habitat, aesthetic quality, or any historical or cultural aspects of the river. This includes the prohibition of dams and powerlines.

To qualify for this designation "a river must be free-flowing in a natural condition and possess outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values".

The Department of the Interior found 43 miles of the Westfield River eligible for this designation in 1993. The sections include the middle, east and west branches that flow through Becket, Chester, Chesterfield, Cummington, Middlefield, and Worthington. Local bylaws have been created in these towns that prohibit dams, dredging, and filling and establish buffer requirements for future development.

The Pioneer Valley Planning Commission is working to extend the National Wild and Scenic eligibility to sections of the river that flow through Huntington, Washington, Windsor, and Savoy. Local "Stream Teams" exist that walk along the river and identify significant wildlife habitats, recreational, historical, and archeological features that would qualify these sections for this designation.

Fishery Resources

The Westfield River provides habitat to a diverse fish assemblage, from pristine high gradient, cold-water, streams to warm-water ponds and impoundments in the lower basin. The Department and MADEP recognize the three branches of the Westfield River above Huntington (the East, West, and Middle Branches) as Coldwater Fishery Resources.

These three branches and most of their tributaries are habitat for naturally reproducing populations of native brook trout. The three branches and 22 tributaries, including one (Bradley Brook, a.k.a. Black Brook, a.k.a. Stage Brook) that enters the Westfield River in the project impoundment, and one (Potash Brook) that enters the Westfield just downstream of the project, are stocked annually with Atlantic salmon fry as part of the multi-state, multi-agency Atlantic Salmon Restoration Program. The entire Westfield River is designated by NOAA Fisheries as Critical Habitat for Atlantic salmon. Each spring thousands of juvenile Atlantic salmon which have spent two years rearing in these streams migrate toward the sea and pass through the project area. After two more years at sea the surviving adult salmon return to the Westfield River to spawn. Returning salmon are trapped at the fish ladder on the first dam in the river in West Springfield. 90% of these salmon are transported to the USFWS Richard Cronin Salmon Station in Sunderland, MA where they are held until spawning. The salmon fry produced are stocked in the basin to continue the program. 10% of the returning adults are trucked upstream beyond the last major dam in the system (the USACE flood control dam at Knightville) and are released to spawn in the wild. After spawning, usually in December, these fish will migrate toward the sea, again passing through the project area.

The segment of the Westfield River which borders the project is classified by MADEP as a warmwater fishery because summer temperatures sometimes exceed 68 degrees F. In reality this segment of river is a transition zone between the coldwater reaches above and the warmwater reaches below. This section of river clearly supports coldwater fish, the project impoundment is annually stocked with trout and fish surveys above and below the project area have found trout and juvenile Atlantic salmon.

COMMENTS

River Flows

The project is licensed to operate in an instantaneous run of river mode and when operated in this manner does not have adverse effects on the flows of the Westfield River.

Water Quality

The project does not adversely affect the water quality of the Westfield River.

Fish Passage and Protection

The project is operating with an interim downstream fish passage facility, constructed in 1998. Recent testing of this facility (and some modifications) has not demonstrated its effectiveness. The applicant is under a current FERC order to repeat the effectiveness testing during the spring of 2010. In response to this order the applicant now proposes to:

- Install ¾ inch clear space Downstream Fish Protection Panels at the project turbine intake starting March 15, 2010 to be completed by April 1, 2010 (start of the smolt passage season).
- Conduct an Intake Velocity Study to occur after completion of the protection panel installation.
- Construct a new Downstream Fish Passage Facility during the 2010 summer season. The design of the new downstream fish passage system has been submitted for agency review.
- Perform Downstream Fish Passage Effectiveness Testing of the new facilities in spring 2011.

The Department has agreed to the applicant's proposal.

Watershed Protection

The project as currently operated does not adversely affect the watershed, however the applicant's proposal to install 30 inches of flashboards on the project dam will inundate marginal wetlands and upstream free-flowing habitats and have a detrimental effect on the watershed.

Threatened and Endangered Species Protection

Provisions of the project's FERC license, if followed, will provide adequate protection for threatened and endangered species found within the project area.

Cultural Resource Protection

The project does not adversely affect the cultural resources of the Westfield River.

Recreation

The project owner has installed a number of enhancements to the recreational opportunities of the Westfield River.

Facilities Recommended For Removal

This facility is not currently recommended for removal by the Department.

CONCLUSION

At this point in time, the Division can not support certification of the Woronoco project as "low impact". However, the FERC license has required the installation of various resource and recreational measures at the project. Woronoco has maintained consultation with this agency to address these license compliance requirements. Many of the compliance requirements have been completed while improvements to fish passage facilities and their effectiveness testing are on-going.

At such time that the remaining FERC license compliance requirements are completed, **and** so long as the project owner does not pursue their proposal to install 30 inches of flashboards on the project dam (thereby inundating marginal wetlands and upstream free-flowing habitats), the Department would support certification of the project as a low impact hydroelectric facility.

Sincerely,

A handwritten signature in black ink, appearing to read "Caleb Slater". The signature is fluid and cursive, with a long horizontal stroke at the end.

Caleb Slater, Ph.D.
Anadromous Fish Project Leader

cc. Peter Clark, Woronoco Hydro
Alfred Nash, Renewable Power Consulting



United States Department of the Interior



FISH AND WILDLIFE SERVICE

New England Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5087
<http://www.fws.gov/newengland>

REF: FERC No. 2631

March 25, 2010

Mr. Fred Ayer, Executive Director
Low Impact Hydropower Institute
34 Providence Street
Portland, ME 04103

Dear Mr. Ayer:

This letter regards the pending application by Woronoco Hydro, LLC (Woronoco) for the Low Impact Hydropower Institute's (LIHI) Low Impact Hydropower Certification for the Woronoco Hydroelectric Project, located on the Westfield River in Russell, Massachusetts.

We have reviewed LIHI's criteria for certification and have assessed whether, in our opinion, the Woronoco Project meets those criteria.

Background

The Woronoco Project was licensed in 2002 to International Paper Company and subsequently the project license was transferred to Woronoco Hydro, LLC. The project license includes requirements to operate in a run-of-river mode, release minimum bypass flows from three dam sections, and implement and evaluate the effectiveness of fish passage for upstream migrating American eels and downstream migrating Atlantic salmon smolts, post-spawned salmon kelts and eels.

Since procurement of the license, Woronoco has been involved in extensive consultations with the U.S. Fish and Wildlife Service (Service), the Massachusetts Division of Fisheries and Wildlife, and Trout Unlimited (TU) to address license condition. Some conditions, like project operational monitoring and minimum flow release implementation, have been completed.

Implementation and testing of fish passage measures have been subject to extensive delays and extensions of time. The Federal Energy Regulatory Commission (FERC) record on fish passage consultation includes documentation of the delays and extensions, and comments and recommendations from the agencies and TU reflect both our concerns and frustration with the pace of passage implementation.

LIHI Application

In Woronoco's application, the certification questionnaire includes their assessment of why the project qualifies for LIHI certification. However, for the following reasons, we do not concur with Woronoco's assessment.

In a number of places, Woronoco references their interest in pursuing river channel modifications downstream from the tailrace to lower the tailwater level and to investigate and potentially pursue installation of flashboards on the dam crest. These potential projects have been previously raised by both Woronoco and the previous project owner. Based on the anticipated impacts of the projects of modifying downstream riffle habitat and back-flooding free-flowing reaches upstream, the Service and other parties have expressed concerns and likely opposition to such proposals. While these projects are not actually proposed at this time, their inclusion in the LIHI application may cause confusion in the future as to whether any approved certification was just for the existing facility or the existing facility plus future modifications. LIHI's review should only address the existing project. A material change to the project such as flashboard increases would initiate another FERC review process and likely a new 401 certification review. LIHI should re-assess the project if any such changes are approved and implemented.

In section C of the questionnaire, "Fish Passage and Protection," Woronoco states that they are in compliance with fish passage requirements. This is not the case. While Woronoco has implemented some passage measures and is proposing to continue to address passage requirements, all required passage measures and post-construction monitoring and assessment have not been completed. Still to be constructed are the downstream passage facility and the third American eel fishway. Also, post-installation assessments of the velocities at the narrow spaced rack (assuming that the rack is now installed or being installed this month as proposed), smolt downstream passage effectiveness, eel downstream passage effectiveness, and upstream eelway effectiveness still need to be completed.

The FERC's E-Library web site includes a complete record of the fish passage requirements and required implementation schedules, and the proposals for, approval and construction of fish passage measures at the project. This record demonstrates the many extensions and delays that have occurred in getting fish passage measures implemented to date. While Woronoco has progressed and now has a schedule for completion of facilities, past deadlines have not been consistently met and delays have occurred. Given this record and the number of issues still to be addressed and their associated costs, further delays are possible. As such, there is no guarantee that measures will be implemented in a timely matter.

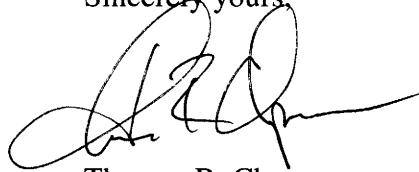
Conclusion

Although Woronoco has made some efforts to implement required license conditions over the past few years, at this time Woronoco has yet to complete upstream eel and downstream fish passage measures and assessments. Since the fish passage criteria for LIHI certification has not yet been met, and there is no guarantee that passage measures will be completed in a timely manner, we cannot support LIHI certification.

If all the outstanding fish passage requirements are completed according to the agreed-upon schedule, this project is likely to be certifiable by LIHI at that time.

We appreciate the opportunity to provide information relative to fish and wildlife issues and the Low Impact Hydropower Certification process, and thank you for your interest in these resources. If you have any questions, please contact Mr. John Warner of this office at 603-223-2541, extension 15.

Sincerely yours,

A handwritten signature in black ink, appearing to read 'T. Chapman', with a long horizontal flourish extending to the right.

Thomas R. Chapman
Supervisor
New England Field Office

APPENDIX B

FERC ORDERS AND RESOURCE AGENCY DOCUMENTS REFERENCED IN THIS REVIEW DOCUMENT

FEDERAL ENERGY REGULATORY COMMISSION
Washington, D.C. 20426

OFFICE OF ENERGY PROJECTS

Project No. 2631-039 -- Massachusetts
Woronoco Hydroelectric Project
Woronoco Hydro LLC

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

January 11, 2010

Mr. Peter B. Clark
Woronoco Hydro LLC
823 Bay Road
P.O. Box 149
Hamilton, MA 01936

Subject: Rejection of December 21, 2009 filing; Necessary actions

Dear Mr. Clark:

We received your December 21, 2009 filing regarding fish passage measures at the Woronoco Hydroelectric Project, filed in response to the Commission's July 21, 2009 Order Approving Downstream Atlantic Salmon Smolt Passage Effectiveness Report and Requiring Further Action Pursuant to License Article 404,¹ and our November 25, 2009 Order Granting Final Extensions of Time.

This letter provides the reasons your filing is rejected, and specifies the actions you need to take in order to comply with the specific requirements of license article 404 addressed in the July 21, 2009 and November 25, 2009 orders.

License article 404 requires you to develop a comprehensive fish passage plan, with provisions to install, operate, maintain, and evaluate, as appropriate, upstream and downstream passage facilities for Atlantic salmon and American eel. The article requires that the plan be prepared in consultation with the Massachusetts Department of Environmental Protection (MDEP), Massachusetts Department of Fisheries and Wildlife (MDFW), and the U.S. Fish and Wildlife Service (FWS). Measures you proposed to comply with article 404 were first modified and approved in an April 20, 2006 order.²

In our November 25, 2009 Order Granting Final Extensions of Time, we approved your October 22, 2009 request for an additional 60 days, or until December 15, 2009, to

¹ 128 FERC ¶ 62,050 (2009).

² Order Modifying and Approving Comprehensive Fish Passage Plan Pursuant to License Article 404 and Requiring Further Actions. 115 FERC ¶ 62,091 (2006).

Project No. 2631-039

2

file the elements required by the July 21, 2009 order's paragraphs (B), (D), and (E). In summary, paragraph (B) requires you to file, for Commission approval, a plan and schedule for the annual installation and removal of trashrack overlays, or for the installation of new trashracks, including copies of resource agency consultation.

Paragraph (D) requires you to file a report on a study, designed and performed in consultation with the FWS and the MDFW, of trashrack intake velocities, and provide measures to be taken if excessive velocities are found. If the study cannot be performed within 90 days, a schedule for completing the study and filing the report with the Commission before April 15, 2010, is to be provided.

Paragraph (E) requires you to file, for Commission approval, a plan and schedule for evaluating the effectiveness of downstream salmon smolt passage, with the new trashrack configuration installed, during spring 2010. The plan is to address issues previously raised by the FWS, MDFW, and Trout Unlimited (TU), and include copies of resource agency consultation.

December 21, 2009 Filing

Under Introduction in your filing, you indicate you are proposing to revise the project's comprehensive fish passage plan, including a new downstream fish passage system. You indicate that a draft revised plan was provided to the resource agencies on December 11, 2009. Under Schedule, you indicate that the revised plan would be filed with the Commission by April 2010, and that the new facility would also be installed in 2010, pending Commission approval. The majority of your December 21, 2009 filing deals with this new proposal to modify existing fish passage facilities, and the modification or completion of outstanding requirements under article 404. It is not entirely clear how your filing addresses the requirements of the July 21, 2009 and November 25, 2009 orders.

Under Downstream Fish Passage System, you indicate that you do not intend to pursue installation of a full-depth angled trashrack. (This section does not appear to be complete.) Then, under Operation and Maintenance, you indicate that the project is already equipped with removable rack panels with three-quarter-inch clear spacing, which are automatically cleaned with a mechanical rake. You do not provide the plan, schedule, and resource agency consultation required under paragraph (B) of the July 21, 2009 order.

You seem to indicate that collection of intake velocity measurements would occur after the relocation of the downstream fish passage facility. However, modification of the project's downstream passage facility has not yet received resource agency review or Commission approval. Your filing does not clearly address the schedule and resource

Project No. 2631-039

3

agency consultation requirements of paragraph (D) of the July 21, 2009 order.

You indicate that a plan for testing the effectiveness of downstream salmon smolt passage would not be filed until November 2010, with testing targeted for April or May 2011. This schedule also appears to be based on a proposed modification to the project's downstream fish passage facility that has not yet been approved. The 60-day extension of time provided by the November 25, 2009 Order Granting Final Extensions of Time was to allow you to complete consultation on, and provide a plan and schedule for, fish passage effectiveness testing during the 2010 spring smolt passage season. The FWS and MDFW did not object to these further extensions, but they noted that downstream smolt passage needed to be evaluated in spring 2010, and that further delays were unacceptable.

As noted in the November 25, 2009 final extension order, we have previously granted six extensions of time for the comprehensive plan, or components of it, specifically related to salmon protection, and have issued two modification and approval orders, including the July 21, 2009 order. We based our November 25, 2009 approval of your extension request on your indication that you would utilize the additional time to complete resource agency consultation, and that you were maintaining consultation at that time. However, you do not provide any agency comments in your December 21, 2009 filing.

Conclusions and Necessary Actions

Your failure to file the materials required by paragraphs (B), (D), and (E) of the July 21, 2009 order within the extended period provided you in the November 25, 2009 Order Granting Final Extensions of Time places you in violation of the requirements of article 404 of your license for the Woronoco Project. You will remain in violation until you file all of the material required by the July 21, 2009 order. Within 14 days of the date of this letter, you need to file a detailed schedule for preparing and filing this material. This does not constitute an extension of time. An original and eight copies of the required material must be filed with:

The Secretary
Federal Energy Regulatory Commission
Mail Code: DHAC, PJ-12.3
888 First Street, N.E.
Washington, D.C. 20426

This letter constitutes notice pursuant to Section 31(a) of the Federal Power Act. Under Section 31, the Commission is authorized to assess civil penalties of up to \$11,000 per day, per violation, for failure to comply with the terms and conditions of your license.

Project No. 2631-039

4

The Commission may also revoke your license or take other enforcement actions, including directing you to cease project operation. Any actions you take to come into compliance with your license will be used to determine future Commission actions.

Thank you for your cooperation. If you have any questions concerning this letter, please contact B. Peter Yarrington at (202) 502-6129.

Sincerely,



Heather Campbell
Acting Director
Division of Hydropower
Administration and Compliance

cc: John P. Warner
U.S. Fish and Wildlife Service
New England Field Office
70 Commercial Street, Suite 300
Concord, NH 03301

Caleb Slater
Massachusetts Department
of Fish and Wildlife
1 Rabbit Hill Road
Westboro, MA 01581

Robert Kubit
Massachusetts Department of
Environmental Protection
Division of Water Quality
67 Main Street, 2nd floor
Worcester, MA 01608

Donald Pugh
Trout Unlimited
Deerfield/Millers River Chapter
10 Old Stage Road
Wendell, MA 01379

Alfred Nash
Renewable Power Consulting, PA
P.O. Box 195
Palmyra, ME 04965

130 FERC ¶ 62,171
UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Woronoco Hydro, LLC

Project No. 2631-039

ORDER APPROVING PLANS AND SCHEDULES FOR TRASHRACK
INSTALLATION AND TESTING, AND A REVISED SCHEDULE FOR
DOWNSTREAM ATLANTIC SALMON SMOLT PASSAGE EFFECTIVENESS
STUDY, PURSUANT TO LICENSE ARTICLE 404

(Issued March 01, 2010)

1. On January 22, 2010, Woronoco Hydro, LLC (licensee) filed plans and schedules for the installation and use of seasonal trashrack overlays, trashrack velocity testing, and a revised schedule for downstream Atlantic salmon smolt passage effectiveness studies at the Woronoco Project, as required by the Commission's Order Approving Downstream Atlantic Salmon Smolt Passage Effectiveness Report and Requiring Further Action Pursuant to License Article 404, issued July 21, 2009.¹ The Woronoco Project is located on the Westfield River in Hampden County, Massachusetts.

BACKGROUND

2. The Woronoco Project includes adjacent north and south dams. An intake structure with 1.25-inch-clear bar spacing on its trashracks and an existing downstream fish passage facility are located at the south dam. The passage facility consists of an open-topped metal chute, a timber gate, and a plunge pool that has been modified to enhance safe fish passage. The chute is located adjacent to the project's intake, and operates using a flow of 20 cubic feet per second (cfs).

LICENSE REQUIREMENTS AND STATUS

3. Article 404 of the project license, issued April 30, 2002,² requires a comprehensive fish passage plan (comprehensive plan), with provisions to install, operate, maintain, and evaluate upstream and downstream fish passage for Atlantic salmon and American eel. A comprehensive plan filed by the licensee was addressed in the Commission's April 20, 2006 Order Modifying and Approving Comprehensive Fish Passage Plan Pursuant to License Article 404 and Requiring Further Actions.³ Following

¹ 128 FERC ¶ 62,050 (2009).

² 99 FERC ¶ 62,075 (2002).

³ 115 FERC ¶ 62,091 (2006).

issuance of the April 20, 2006 order, the Commission issued additional modification and approval orders addressing revisions to the comprehensive plan, including the July 21, 2009 order.

4. Paragraph (B) of the July 21, 2009 order requires the licensee to file, for Commission approval, a plan and schedule for the annual installation and removal of trashrack overlays, or for the installation of new trashracks. The licensee is to consult with the Massachusetts Division of Fisheries and Wildlife (MDFW) and the U.S. Fish and Wildlife Service (FWS) regarding the plan and schedule, and provide specified information regarding agency consultation.

5. Paragraph (D) of the July 21, 2009 order requires the licensee to perform a study determining intake velocities at the trashrack, develop detailed velocity profiles under varying levels of generation, identifying any areas where velocities exceed 2 feet per second (fps). The licensee is to plan the study, and determine measures to be taken if excessive velocities are found, in consultation with the MDFW and the FWS. The order required that the results of the study be filed with the Commission within 90 days, and if the study results could not be filed by then, the licensee is to instead file a schedule for completing the study and filing the report with the Commission before April 15, 2010.

6. Paragraph (E) of the July 21, 2009 order requires the licensee to file, for Commission approval, a plan and schedule for evaluation of effectiveness of downstream salmon smolt passage at the project, with the new trashrack configuration installed, during spring 2010. The plan as specified in the order is to address issues previously raised by the MDFW, FWS, and the Millers River Chapter of Trout Unlimited (TU), and provide specified information regarding agency consultation.

7. On December 21, 2009, the licensee filed revised plans pursuant to Article 404, addressing downstream smolt passage in response to the July 21, 2009 order, as well as other elements of the comprehensive plan. The plans indicated that a draft had been provided to the resource agencies on December 11, 2009, and agency comments had not yet been received. On January 11, 2010, the Commission rejected the December 21, 2009 filing. The licensee revised its plans after obtaining comments from the agencies, and re-filed them on January 22, 2010.

LICENSEE'S PLANS AND SCHEDULES

Installation and Use of Seasonal Trashrack Overlays

8. In its January 22, 2010 filing, the licensee proposes to use 13 full-depth, removable trashrack overlay panels to protect downstream-migrating salmon smolts, and also adult eel. The use of the panels would reduce the trashrack spacing from the current 1 ¼-inch clear spacing to ¾-inch clear spacing. The removable trashrack panels would be installed annually in time for the downstream smolt migration season of April 15

through June 15, and also for the downstream adult eel migration period, September 1 through November 15. The licensee included further information on the operation and maintenance of the downstream passage facility, indicating that the racks would be cleaned automatically with a mechanical rake, supplemented by manual cleaning during periods of heavy debris load. The licensee proposes to begin the initial installation of the removable trashrack panels by March 15, 2010, and complete installation by April 1, 2010, before the downstream smolt passage season.

Trashrack Intake Velocity Study

9. The licensee proposes to perform the trashrack intake velocity study within 7 days of trashrack overlay installation this spring, or as soon as possible thereafter when sufficient river flows occur. Velocity evaluations would be based on a combination of hydraulic calculations based on screen size and open area, and in-water velocity measurements. The measurements at the screens would be taken at water depths of approximately 2, 5, 8, 11, and 13 feet, at horizontal increments of about 4 feet. Horizontal increments would be decreased to 2 feet in area closest to the penstock inlet. Measurements would be taken at the face of the rack, and also 3 feet upstream of the rack face. The velocities would be obtained during 100-percent and 80 percent unit gate openings, with the all three project units in operation. Limited velocity measurements would also be taken during spill conditions.

10. The licensee indicates that, if areas with intake velocities greater than 2 feet per second are identified, additional data would be collected in an effort to better locate and define high-velocity areas. The licensee also indicates that, if such areas of high intake velocity are found, it would consult with the MDFW and FWS, and implement agency-approved modifications to reduce impacts on smolt passage.

11. A draft trashrack intake velocity study report would then be filed with the resource agencies and the Commission within one week of completion of the study, and would include results in graphical and tabular form for resource agency review. Areas of high velocity would be addressed, with measures that could include operational restrictions or intake reconfiguration. The licensee would then file a final report with the Commission by May 31, 2010.

Downstream Atlantic Salmon Smolt Passage Effectiveness Study

12. The licensee proposes to delay the study of downstream smolt passage effectiveness because a new downstream fish bypass system is currently being designed. The details of the design would incorporate the results of the trashrack intake velocity study. The licensee plans to file the proposal for the new downstream passage system with the Commission by May 3, 2010, with a goal of installation in the summer 2010 construction season, and operational testing by September 30, 2010.

13. Because of its plans to install a new downstream fish passage facility in 2010, the licensee now proposes to conduct the studies of downstream smolt passage effectiveness in spring 2011. The licensee would revise its existing effectiveness study plan in consultation with the resource agencies, and file the revised plan with the Commission by November 2010. The effectiveness study would then be conducted in late April or early May 2011. The study would be conducted, if possible, in conjunction with testing at the licensee's Indian River Project, FERC No. 12462, located immediately upstream. If there are potential problems with high river flows, water temperatures, or equipment, the licensee would consult the resource agencies to determine the most appropriate way to proceed. The licensee indicates that a report on the effectiveness study results would be provided to the resource agencies for review by July 15, 2011. The licensee anticipates that, following receipt of agency comments and recommendations, it would be able to file a final report with the Commission by September 15, 2011. Additional testing or modification of the downstream passage system, if necessary, would then be addressed as soon as possible in the following fish passage and construction seasons.

CONSULTATION

14. The MDFW and the FWS provided comments on the licensee's plans and schedules, dated December 29, 2009 and January 21, 2010, respectively. Comments were also received from TU, dated December 30, 2009. The MDFW indicated that, after consultation with the Massachusetts Department Environmental Protection, the FWS, and TU, it accepts the licensee's plans and schedules regarding trashrack installation, velocity testing, installation of new fish passage elements to be approved by the agencies, as well as conducting effectiveness testing in spring 2011.

15. The FWS commented that more velocity measurements should be made in the licensee's intake velocity study, recommending measurements at depths of 2, 5, 8, 11, and 14 feet, using horizontal intervals of 2 to 3 feet. The FWS commented that the licensee's schedule for intake velocity reporting was generally acceptable, but that because the downstream smolt passage season would be underway during part of the identified period, remedial measures should be implemented as soon as agency concurrence is received, rather than possibly waiting for Commission approval of a final report. The FWS noted that the licensee needs to proceed with resource agency consultation regarding plans for downstream effectiveness testing of the new downstream passage system in spring 2011, and that testing would need to proceed at Woronoco in spring 2011 regardless of whether the Indian River Project is ready for testing.

16. TU indicated that the licensee's plans for a revised downstream fish passage system would need to address the passage of required minimum flows, and also commented that more intake velocity measurement points would be needed, and that the exact location of the measurement points should depend on the size and location of the penstock opening.

DISCUSSION

17. The plans and schedules in the licensee's January 22, 2010 filing adequately address the requirements of the July 21, 2009 order's paragraphs (B), (D), and (E) regarding seasonal trashrack overlays, study of trashrack intake velocities and measures to address excessive velocities, and evaluation of downstream salmon smolt passage effectiveness at the Woronoco Project.
18. Regarding the licensee's trashrack intake velocity study, we agree with the FWS and TU that the spacing between water velocity measurement points at the trashrack need to be reduced. The licensee should use the spacing identified by the FWS, or use alternative spacing identified in agreement with the MDFW and the FWS.
19. We also agree with FWS regarding the need to implement measures addressing areas of high velocity identified during the trashrack intake velocity study as soon as possible in order to best protect the 2010 downstream smolt migration. Therefore, the licensee should file a draft trashrack intake velocity study report with the resource agencies and the Commission within one week of completion the study, implement modifications to address areas of high velocity following approvals by the MDFW and the FWS, and then describe the results of the velocity testing and any measures taken in the final report filed with the Commission by May 31, 2010. However, we note that any significant changes to approved project features would require prior Commission approval. The licensee should consult with the Commission prior to proceeding with any modifications that may constitute significant changes.
20. The licensee should follow the operation and maintenance procedures included in its January 22, 2010 filing to help ensure successful operation of the downstream passage facility. However, the licensee should re-file this material as a separate operation and maintenance plan, for Commission approval, at the same time that the final downstream passage effectiveness study report is filed. The operation and maintenance plan should include any modifications identified in the passage effectiveness testing, and contain copies of resource agency approvals of the plan.
21. With the modifications we identify above, the licensee's plans and schedules regarding the use of seasonal trashrack overlays, identification and mitigation for any areas of high intake velocity, and evaluation of downstream passage effectiveness at the Woronoco Project adequately address the requirements of the Commission's July 21, 2009 order, and address protection of downstream-migrating Atlantic salmon smolts in spring 2010, and also downstream smolt passage effectiveness testing.
22. The licensee should keep the resource agencies and the Commission informed of any issues that may affect the schedules discussed in this order, so that effective downstream Atlantic salmon smolt passage can be provided at the Woronoco Project as quickly as possible.

23. Further, the Commission should reserve the right to require changes to project structures, fish passage facilities, or operation, based on information provided by the licensee, the FWS, or the MDFW, in order to ensure the effective passage of Atlantic salmon smolts downstream at the Woronoco Project.

The Director orders:

(A) Woronoco Hydro, LLC's (licensee) plans and schedule for the installation and use of seasonal trashrack overlays at the Woronoco Project, as described in the licensee's January 22, 2010 filing, fulfill the requirements of paragraph (B) of the Commission's July 21, 2009 order, and are approved.

(B) The licensee's January 22, 2010 plans and schedule regarding a trashrack intake velocity study, and mitigation for any areas of high intake velocity, fulfill the requirements of paragraph (D) of the Commission's July 21, 2009 order and are approved, with the following modifications: (1) the licensee shall use spacing between intake velocity measurement points as identified by the U.S. Fish and Wildlife Service (FWS), or use alternative spacing as determined in agreement with the FWS; and (2) any areas of high velocity be addressed through measures approved by the Massachusetts Division of Fisheries and Wildlife Resources and the FWS, and described in the final report to be filed with the Commission by May 31, 2010. If measures necessary to address areas of high velocity might constitute significant changes to approved project features, the licensee shall consult with the Commission prior to implementing the modifications that may constitute significant changes.

(C) The licensee's January 22, 2010 schedule to file a revised downstream Atlantic salmon smolt passage effectiveness study plan for Commission approval by November 30, 2010, addresses paragraph (E) of the Commission's July 21, 2009 order, and is approved. The study plan shall include copies of completed consultation with the Massachusetts Division of Fisheries and Wildlife Resources (MDFW) and the U.S. Fish and Wildlife Service (FWS), and indicate that the study shall be conducted by May 15, 2011. The study plan shall also indicate that study results shall be provided to the MDFW and the FWS for comment by July 15, 2011, and that the final report, including copies of comments from the MDFW and the FWS, made with the Commission by September 15, 2011.

(D) The licensee shall follow the downstream passage facility operation and maintenance procedures included in the January 22, 2010 filing. The licensee shall then file a separate operation and maintenance plan, for Commission approval, at the same time that the final downstream passage effectiveness report is filed. The filed operation and maintenance plan shall include any modifications identified in the passage effectiveness testing, and shall contain copies of approvals of the plan from the Massachusetts Division of Fisheries and Wildlife Resources and the U.S. Fish and Wildlife Service.

(E) The licensee shall keep the Massachusetts Division of Fisheries and Wildlife Resources, the U.S. Fish and Wildlife Service, and the Commission informed of any issues that may affect the schedules discussed in this order, so that effective downstream Atlantic salmon smolt passage can be provided at the Woronoco Project as quickly as possible.

(F) The Commission reserves the right to require changes to project structures, fish passage facilities, or operation, based on information provided by the licensee, the Massachusetts Division of Fisheries and Wildlife Resources, or the U.S. Fish and Wildlife Service, in order to ensure the effective downstream passage of Atlantic salmon smolts at the Woronoco Project.

(G) This order constitutes final agency action. Requests for rehearing by the Commission may be filed within 30 days of the date of issuance of this order, pursuant to 18 C.F.R. § 385.713.

Heather Campbell
Acting Director
Division of Hydropower Administration
and Compliance

Document Content(s)

P-2631-039.DOC.....1-7



United States Department of the Interior



FISH AND WILDLIFE SERVICE

New England Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5087
<http://www.fws.gov/newengland>

FERC No. 2631

May 13, 2010

Mr. Alfred Nash, P.E.
P.O. Box 195
Palmyra, ME 04965

Dear Mr. Nash:

This regards the *2010 Fish Passage Effectiveness Study Plan for the Woronoco Hydroelectric Project*, located on the Westfield River in Hampden County, Massachusetts. The plan was submitted for our review and comment by electronic mail on April 28, 2010.

The proposed plan would monitor the downstream migration of radiotagged Atlantic salmon smolts as they pass the project and determine the effectiveness of the new fish screening and bypass sluice. It would also monitor the extent of delays smolts endure trying to locate an egress route from the project forebay, and the extent of turbine entrainment. Installation of a downstream radio receiver will also permit assessment of survival of smolts passing the project regardless of passage route.

We have the following comments regarding the proposed plan:

Study Schedule and River Flows

The proposal to monitor passage effectiveness in 2010 was a recent change from the previous plan to assess passage in 2011. While we endorse the acceleration of the effectiveness testing, the late decision to undertake the study in 2010, coupled with the recent installation of new downstream passage facilities, means that the effectiveness testing has not yet started. Due to uncommonly low flows this spring, river flows are currently at or below turbine capacity. This is a serious concern because testing of the facility under flow conditions below full generation will not provide adequate information upon which to determine if the facility is effective. If river flows remain low through the testing period, additional testing in 2011 will likely be required. In 2008, a similar situation occurred when the previous downstream passage configuration was evaluated at flows below project generation capacity. This office and the Massachusetts Division of Fisheries and Wildlife (MDFW) commented at that time that the evaluation was done under less than worst-case conditions, and that the effectiveness testing needed to be repeated. The Federal Energy Regulatory Commission (FERC) concurred with this recommendation. If a

Mr. Alfred Nash, P.E.
May 13, 2010

2

similar situation occurs with this year's testing, we anticipate a similar agency and FERC response.

Smolt Release Location

The planned release location is ¼ mile upstream from the bypass system at the upstream bridge abutment. This release location seems adequate if the project is under a no spill situation. However, if flows increase to the point where spill is occurring, a more upstream location or release from mid-channel is recommended to approximate a natural distribution of down-running smolts. Under these conditions, fish releases on the north side of the bridge could result in more smolts passing over the dam via spill than would naturally occur.

Bypass Flow

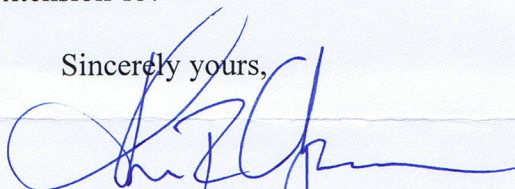
Under the proposed plan, the fish bypass would be set to release a flow of 35 cfs during the first two smolt releases, but the "final two test fish releases shall be done under lower bypass flow (below 35 cfs) provided the preliminary analysis indicates that the bypass is effective."

While we conceptually have no problem with the evaluation of a lower bypass flow, the decision on whether the initial testing at 35 cfs is effective should be made in consultation with and concurrence of this office, the MDFW and Trout Unlimited. In order for the Fish and Wildlife Service to agree to testing lower flows, highly successful fish passage with minimal passage delays will be needed. We also note that while radio-telemetry data can be downloaded and quickly reviewed for individual fish, invariably there are fish whose fate cannot be clearly determined, and further analysis of those fish is needed. Unless the data is very clear on the fate of virtually all the released fish from the first two releases, we will be reluctant to agree to evaluation of lower bypass flows.

Lastly, we request that the actual downloaded radio-telemetry data be provided for review by Don Pugh of Trout Unlimited, as was done in the previous effectiveness testing at the project.

We appreciate this opportunity to comment. If you have any questions, please contact Mr. John Warner of this office at 603-223-2541, extension 15.

Sincerely yours,



Thomas R. Chapman
Supervisor
New England Field Office

Mr. Alfred Nash, P.E.
May 13, 2010

3

cc: Mr. Peter B. Clark, Manager
Woronoco Hydro, LLC
P.O. Box 149
Hamilton, MA 01936
CRC – Ken Sprankle
MDEP – Bob Kubit
MDFW - Caleb Slater
Engineering FO – Dick Quinn
TU- Don Pugh
FERC-Div of Hydropower Admin and Compliance
Reading file
ES: JWarner:5-13-10:603-223-2541

UNITED STATES OF AMERICA 131 FERC ¶ 62,275
FEDERAL ENERGY REGULATORY COMMISSION

Woronoco Hydro, LLC

Project No. 2631-041 &-042

ORDER APPROVING SCHEDULE FOR COMPLETING ACTIONS PURSUANT TO
LICENSE ARTICLE 404 AND APPROVING REVISED DOWNSTREAM SALMON
SMOLT PASSAGE EFFECTIVENESS STUDY PURSUANT TO ARTICLE 404

(Issued June 30, 2010)

1. On June 9, 2010, Woronoco Hydro, LLC (licensee) filed a schedule for the completion of actions pursuant to article 404 of the license for the Woronoco Project, and a revised plan for the completion of a downstream salmon smolt passage effectiveness study pursuant to license article 404.¹ The Woronoco Project is located on the Westfield River, in Hampden County, Massachusetts.

BACKGROUND AND LICENSE REQUIREMENTS

2. The Woronoco Project includes adjacent north and south dams, with the project intake located at the south dam. The intake structure includes trashracks with 1.25-inch-clear bar spacing and a downstream fish passage facility. The downstream passage facility was modified in May 2010, to include 13 full-depth, removable trashrack overlays that reduce the maximum clear bar spacing to 3/4 inch, and a new fish bypass system with a 3-foot-wide steel entrance channel and collection box approximately 10 feet in length. Removable stop logs are used to maintain an attraction flow of 35 cubic feet per second. A 30-inch diameter pipe exits the collection chamber and discharges into a downstream plunge pool.

3. License article 404 requires the licensee to file a comprehensive fish passage plan, with provisions to install, operate, maintain, and evaluate upstream and downstream fish passage for Atlantic salmon and American eel. The licensee filed a comprehensive fish passage plan, including a downstream salmon smolt passage effectiveness study plan, on September 21, 2005, which was addressed in the Commission's April 20, 2006 Order Modifying and Approving Comprehensive Fish Passage Plan Pursuant to License Article 404 and Requiring Further Actions.²

¹ 99 FERC ¶ 62,075 (2002).

² 115 FERC ¶ 62,091 (2006).

4. The licensee filed the results of its downstream smolt passage study September 28, 2006. However, the study results were found to be inconclusive, and the licensee therefore filed a plan for a second downstream smolt passage study on March 24, 2008. The study plan was approved in an order issued April 9, 2008,³ which required the filing of a final study report by September 1, 2008.

5. The licensee completed the second downstream smolt passage study in June 2008. The results indicated that the existing downstream passage facility was not effective in passing smolts and preventing entrainment. The licensee therefore proposed to install trashracks with closer bar spacing to better protect salmon smolts. An order issued July 21, 2009,⁴ required a plan and schedule for conducting a new downstream smolt passage effectiveness study in spring 2010, with the new trashracks installed. The order also required the filing of a trashrack intake velocity study, to include mitigation for any areas of high velocity, and also an operation plan for the smolt passage facilities.

6. The licensee filed plans to install seasonal trashrack overlays at the project. The plans were approved in an order issued March 1, 2010.⁵ The order also approved a plan and schedule for the trashrack intake velocity study, with a final report to be filed with the Commission by May 31, 2010. The order's paragraph (C) approved the licensee's schedule to file, by November 30, 2010, a revised plan for downstream smolt effectiveness study to be performed by May 15, 2011, with a final report filed by September 15, 2011. Additionally, the order required an operation and maintenance plan.

7. On May 4, 2010, the licensee filed plans to modify the project's downstream fish bypass facility in 2010, and accelerate the schedule for performing the downstream smolt passage study. An order issued May 12, 2010,⁶ approved the licensee's plan. The order's paragraph (F) requires a schedule with target dates for: (1) completing the modifications to the facility in 2010; (2) performing the intake velocity study in 2010; (3) filing the revised plan for the downstream passage study in 2010; and (4) filing the final report on the downstream passage study, the results of a trashrack intake velocity study performed using the new overlays, and a downstream passage operation and maintenance plan.

8. License article 404 and all of the orders discussed above require that the identified study plans and reports include copies of consultation and approval from the Massachusetts Division of Fisheries and Wildlife (MDFW) and the U.S. Fish and Wildlife Service (FWS).

³ 123 FERC ¶ 62,026 (2008).

⁴ 128 FERC ¶ 62,050 (2009).

⁵ 130 FERC ¶ 62,171 (2010).

⁶ 131 FERC ¶ 62,108 (2010).

LICENSEE'S PROPOSALS

Schedule

9. The licensee proposes the following schedule of target dates for actions pursuant to license article 404, as required by paragraph (F) of the May 12, 2010 order.

<u>Action</u>	<u>Target Date</u>
Downstream passage facility installation	May 20, 2010
Perform intake velocity testing	May 20, 2010
Draft intake velocity report to agencies	June 4, 2010
Final intake velocity report to Commission	July 6, 2010
Draft downstream smolt passage study plan to agencies	April 28, 2010
Final downstream smolt passage study plan to Commission	June 4, 2010
Perform downstream smolt passage study	May/June 2010
Draft downstream smolt passage report to agencies	June 15, 2010
Final downstream smolt passage report to Commission	September 15, 2010
Draft operation and maintenance plan to agencies	July 15, 2010
Final operation and maintenance plan to Commission	September 15, 2010
Develop downstream adult eel study plan	June 2010
Install upstream eel ladder at north dam	July 2010
Monitor downstream adult eel passage	September 2010
Perform phase 2 upstream eel passage study	Aug/October 2010
Draft phase 2 upstream eel report to agencies	December 31, 2010
Final phase 2 upstream eel report to Commission	January 28, 2011

10. The licensee indicated in a June 22, 2010 telephone conversation with Commission staff that the actions regarding the downstream passage facility installation and velocity testing and the downstream smolt passage study plans are on schedule.⁷

Revised Downstream Salmon Smolt Passage Effectiveness Study

11. The licensee's revised plan for a downstream smolt passage effectiveness study, filed pursuant to paragraph (C) of the March 1, 2010 order, indicates that the study would generally be a repetition of the study approved in the April 9, 2008 order and performed in June 2008. The study plan accelerates the schedule for the study and reports, as in the target schedule outlined above, with the study being performed in May and June 2010,

⁷ June 22, 2010 telephone conversation between Peter B. Clark, licensee's representative, and B. Peter Yarrington, Commission staff.

with a draft study report being supplied to the resource agencies by June 15, 2010, and a final study report being filed with the Commission by September 15, 2010. As indicated above, the licensee's work is currently in line with the schedule.

CONSULTATION

12. The licensee supplied a draft of the study plan to the MDFW, the Massachusetts Department of Environmental Protection, the FWS, and Trout Unlimited (TU) on April 28, 2010. The MDFW responded to the licensee via email on May 10, 2010, indicating that it was concerned whether flows would be sufficient for the study. In an email sent May 6, 2010, TU indicated that it had no concerns regarding the study plan. The FWS provided comments in a letter dated May 13, 2010, indicating that it endorsed conducting the study in 2010, but noted that river flows had been low at the project, with flows at or below turbine capacity. The FWS wrote that performing the study without full generation would not provide accurate information on the effectiveness of passage facilities, triggering the need for additional testing in 2011.

DISCUSSION

13. The licensee's schedule for completion of fish passage measures, filed June 9, 2010 pursuant to paragraph (F) of the May 12, 2010 order, provides reasonable target dates for study development and performance, and for providing plans and reports to the resource agencies and the Commission, and should be approved.

14. The licensee should work to ensure that the actions identified in the schedule comply with the requirements specified in previous Commission orders, including, but not limited to, providing draft plans and reports to specified resource agencies, ensuring that the agencies have sufficient time to provide comments and recommendations on the drafts, and ensuring that plans and reports filed with the Commission contain copies of the agencies' comments, and that the plans and reports adequately address the comments.

15. The licensee should keep the resource agencies and the Commission informed of any issues that may affect the target dates included in the schedule, so that the fish passage requirements of license article 404 can be addressed as soon as possible.

16. The licensee's revised plan for conducting a downstream smolt passage effectiveness study in 2010, filed June 9, 2010, pursuant to paragraph (C) of the Commission's March 1, 2010 order, should allow for the completion of data collection on the effectiveness of downstream salmon smolt passage at the project. The revised plan should be approved.

17. The licensee's final downstream smolt passage effectiveness report, to be filed with the Commission by September 15, 2010, should fully address any agency comments on supplementing or repeating the study at a later date, and, if appropriate, include a

schedule for performing the additional work and providing draft and final study plans and study reports to the agencies and the Commission.

18. The Commission should reserve the right to require changes to project structures or operation, based on information provided by the licensee or the resource agencies, in order to ensure effective fish passage at the Woronoco Project.

The Director orders:

(A) Woronoco Hydro, LLC's (licensee) schedule for completion of fish passage measures at the Woronoco Project, filed June 9, 2010, pursuant to paragraph (F) of the Commission's May 12, 2010 order, is approved. The licensee shall ensure that the actions identified in the schedule comply with the requirements specified in previous Commission orders.

(B) The licensee shall ensure that the actions identified in the schedule approved in (A) comply with the requirements specified in previous Commission orders, including, but not limited to, providing draft plans and reports to specified resource agencies, ensuring that the agencies have sufficient time to provide comments and recommendations on the drafts, and ensuring that plans and reports filed with the Commission contain copies of the agencies' comments, and that the plans and reports adequately address the comments.

(C) The licensee shall keep the resource agencies and the Commission informed of any issues that may affect the schedule approved in (A), so that the fish passage requirements of license article 404 can be addressed as soon as possible.

(D) The licensee's revised plan for conducting a downstream smolt passage effectiveness study, filed June 9, 2010, pursuant to paragraph (C) of the Commission's March 1, 2010 order, is approved.

(E) The licensee's final downstream smolt passage effectiveness study report, to be filed with the Commission by September 15, 2010, shall fully address any resource agency comments regarding supplementing or repeating the study at a later date, and, if appropriate, include a schedule for performing the additional work and providing draft and final study plans and study reports to the resource agencies and the Commission.

(F) The Commission reserves the right to require changes to project structures or operation, based on information provided by the licensee or the resource agencies, in order to ensure effective fish passage at the Woronoco Project.

Project No. 2631-041&-042

6

(G) This order constitutes final agency action. Requests for rehearing by the Commission may be filed within 30 days of the date of issuance of this order, pursuant to 18 C.F.R. § 385.713.

Steve Hocking
Chief, Biological Resources Branch
Division of Hydropower Administration
and Compliance

Document Content(s)

P-2631-041.DOC.....1-6

Woronoco Hydro LLC
PO Box 149, Hamilton, MA 01936

September 15, 2009

VIA EFILING

The Secretary
Federal Energy Regulatory Commission
Mail Code: DHAC, PJ-12.3
888 First Street, N.E.
Washington, DC 20426

Re: FERC Project No. 2631-MA
Filing of Fish Passage Effectiveness Test Report

Dear Secretary:

The Commission issued Order Approving Schedule for Completing Actions Pursuant to License Article 404 and Approving Revised Downstream Salmon Smolt Passage Effectiveness Study Pursuant to Article 404 (131 FERC ¶ 62,275) on June 30, 2010 for the Woronoco Project (FERC No. 2631). The Order required filing with the Commission the results of the downstream salmon smolt passage effectiveness study conducted during the 2010 spring migration season. Pursuant to the Order requirements Woronoco is filing the attach report.

A draft of the report was submitted to the Massachusetts Department of Environmental Protection (MDEP), the Massachusetts Division of Fisheries and Wildlife (MDFW), the U.S. Fish and Wildlife Service (USFWS) and Trout Unlimited (TU) for review and comment on July 15, 2010. Comments on the draft report were received from each agency except MDEP, which typically defers to the MDFW. A copy of their comments is included in this filing and the comments received were incorporated into the final report except as noted below.

System Modifications

The MDFW and USFWS support Woronoco's proposed changes to the intake and fish bypass system and further investigation of a reason for a high entrainment rate. Woronoco does not propose to deepen the plunge pool since the pool depth is over 6 feet at the point where discharge from the bypass system falls into the plunge pool. Previous testing in 2005 and 2008 did not indicate fish mortality associated with the pool itself. Woronoco believes that fish falling in the discharge plume may have been injured if they hit a peripheral rock if the 35 cfs passage discharge falling from the bypass pipe had spread out as it dropped into the plunge pool. The risk of impact on the rock will be eliminated by installing a baffle in the new bypass discharge pipe to divert the water plume away from the rock and if reconfiguration of the bypass pipe is ineffective, Woronoco will remove this rock to eliminate the risk of impact for fish entering the plunge pool.

Testing Flow

The commentators noted that testing was not conducted under maximum generation because after floods delayed testing without the risk of spill over the dam, river flows remained below 91% of the full hydraulic capacity of the equipment without flashboards. MDFW correctly notes that testing occurred up to 91% of station capacity with a significant number of fish passing during station flows between 80 to 90% of capacity. Woronoco notes that while TU performed an in depth review of river flows experienced at the site during the study period, these results have no bearing on the tested conditions. The critical flow for consideration is the "time of decision" when fish chose the migration route. River flows vary throughout the smolt migration season, which cannot be controlled by the licensee and, while there may be an impact to overall passage timing or motivation of fish to migrate, it is beyond the licensee's area of responsibility to test the majority of fish at exactly the 676 cfs hydraulic capacity of the equipment without the risk of spilling test fish over the dam.

The commentators also state that additional testing should be conducted under "worse" case flow conditions, which are under flood and high trash conditions. Woronoco has proposed to reduce maximum generation to the levels already tested and to conduct additional testing should the benefit of additional generation exceed the significant cost of the testing.

Additional Effectiveness Testing:

Woronoco installed higher fish protection method than prescribed by the USFWS or used throughout the east coast. As expressed in the MDFW letter, the number of entrained fish was unexpected, not readily explainable and was a significant factor in the low efficiency rate of the facility. The USFWS and MDFW recommend that the proposed system modifications be implemented and that additional effectiveness studies be conducted during the 2011 migration season. Woronoco disagrees that additional formal testing is required at the development. Woronoco has indicated that "volunteer" testing will be conducted during the 2011 migration through fish passage effectiveness testing for the upstream Indian River Project (FERC No. 12462). Testing at the Indian River facility will include installation of data collection receivers at the Woronoco Project to confirm safe passage through the Indian River and Woronoco Projects. The data collected during the Indian River study can also be used to confirm that the system modifications have enhanced passage efficiency at the Woronoco development. Woronoco has discussed this approach with the MDFW with the understanding that a portion of the tags and fish would be held in reserve to permit testing of the Woronoco facility with a release upstream of the Woronoco dam in the event that testing at Indian River produced poor results.

Woronoco's reluctance to conduct additional "formal" seasonal study of smolt passage is partially based upon the significant costs for such studies and our perception that another year of study would ultimately have little real benefit for fisheries resources. The downstream passage at the Woronoco development was approved by the various agencies, exceeds the national criteria for fish protection and, upon implementation of the proposed system changes, is expected to have high effectiveness rates. Based on current fish passage technology there does not appear to be any improvements to the existing system that could be made to the current fish passage system beyond the

modifications already agreed to with the agencies. Additional effectiveness testing would simply confirm that changes identified as necessary by the 2010 tests have improved passage rates, which are those that were suggested by TU's review of the test data. Another test will not add to this knowledge. If the proposed changes result in increased effectiveness there would be no need for additional study or facility modification. Should the increased effectiveness be deemed insufficient the agencies could continue further assessment indefinitely with no nationally or regionally established effectiveness rate ever being set and with no identified means to improve the passage system's efficiency.

Woronoco has demonstrated that successful passage is being achieved at the development's intake system (Woronoco's area of responsibility) and it is believed that the proposed system modifications will increase the smolt passage rate through the Project area. Woronoco has made a significant financial investment to be a good steward of the Westfield River and has complied with the Project license. This has resulted in over \$700,000 expended for fish passage installation and testing. These costs are each a significant share of annual revenue, nearly crippling cost for this 2.7 MW station. Given the substantial investment in 3 separate effectiveness tests (2005, 2008 and 2010) leading to installation of state-of-the-art passage facilities, and Woronoco's agreement to implement system enhancements and a voluntary collection of additional passage data in 2011, Woronoco believes that it has gone beyond its regulatory obligation for enhancing downstream fish passage at the Woronoco project. We propose to fix problems identified during agency consultation of the results of the 2010 tests and to voluntarily collect confirming data in 2011 using test fish from the upstream passage testing at Indian River Power Supply. Every fish was tracked by the data collected in 2010 and specific causes were identified for delay of fish passage below the plunge pool and from the tailrace area, as well as reasons for impingement and entrainment. This will result in repairs to prevent further problems in the future. The tests have served their purpose.

The rejection of the need for additional studies is similar to the Commission's December 1998 ruling for the Essex Hydroelectric Project in Vermont (FERC No. 2513). The Essex development is equipped with similar fish passage facilities as the Woronoco development. As noted by the Commission's ruling (85 FERC ¶ 61,442), the Commission acknowledged that additional testing will not result in meaningful information in that significant system changes are not feasible. In the December 1998 ruling denying rehearing, FERC noted:

In any event, the only issue in this proceeding is whether continued effectiveness testing at the Essex No. 19 Project is likely to lead to any improvements in fish passage at the project. We conclude it is not. The agencies' recommendations for facility and operational improvements to the fishway have been adopted. As discussed above, it appears that during periods when there is no spill flow, smolts are able to find and choose the fishway. During periods with spill flow, it appears that they are able to use the fishway, pass over the dam, or pass through the turbines with low mortality rates. Under these circumstances, we affirm the Director's decision to discontinue fish passage effectiveness testing at this project.

Woronoco notes that testing at the Gardners Falls Project (FERC No. 2334) in MA indicated a 72% effectiveness during low generation flows and 26% at high unit generation setting. Due to the high project passage rate (94%), modifications without additional testing, was accepted (95 FERC ¶

62,225). As noted in the Woronoco report, the project passage rate is expected to exceed 90% once the proposed modifications are implemented.

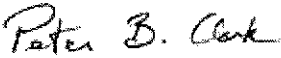
Woronoco also notes that other developments have not been required to conduct additional testing even though results appeared low. The Greenville development (FERC No. 2441) conducted qualitative passage evaluations in 1998 and 1999 with the conclusion:

“However, both agencies feel that effective juvenile passage remains uncertain. However, the CDEP agrees the licensee has documented juvenile clupeids used the downstream bypass as currently designed. The licensee was not required to conduct additional testing.” (92 FERC ¶ 62,205)

Woronoco voluntarily accelerated the passage installation and testing in 2010. The major motivation for the acceleration was the potential for Woronoco to receive grant funding for generation enhancement measures to maximize efficiency and water usage at the development. The requirement to conduct another year of formal studies may jeopardize the project’s eligibility for the grant funding and prevent the ability to implement the generation improvements. With Woronoco’s commitment to implement the facility modifications, the voluntary collection of additional passage data in 2011, and the above discussion of cost effectiveness versus incremental benefits, Woronoco should not be required to conduct a fourth formal effectiveness test of the facility in 2011.

Please contact me at 978-468-3999 (email: pclark@swiftrivercompany.com) if you have any questions or need additional information regarding this filing.

Sincerely,


Peter B. Clark
Manager

FEDERAL ENERGY REGULATORY COMMISSION
Washington, D.C. 20426

OFFICE OF ENERGY PROJECTS

Project No. 2631-038 -- Massachusetts
Woronoco Hydroelectric Project
Woronoco Hydro LLC

Mr. Peter B. Clark
Woronoco Hydro LLC
823 Bay Road
P.O. Box 149
Hamilton, MA 01936

August 17, 2010

Subject: Phase 1 upstream eel passage effectiveness study report

Dear Mr. Clark:

We received the February 28, 2010 Phase 1 upstream eel passage effectiveness study report (Phase 1 report) for the Woronoco Project. The report was filed pursuant to paragraph (B) of the Commission's July 23, 2009 Order Acknowledging Phase 1 Upstream American Eel Passage Effectiveness Study Report, Approving Repetition of the Phase 1 Study, and Requiring a Revised Schedule for the Phase 2 Study Pursuant to License Article 404.¹

License article 404 requires you to develop a comprehensive fish passage plan, with provisions to install, operate, maintain, and evaluate upstream and downstream passage facilities for Atlantic salmon and American eel. Measures you proposed to comply with article 404 were first approved in an April 20, 2006 order.² Phase 1 of studies to evaluate upstream passage of juvenile eels involves releasing eels at the downstream end of project eel ladders, and counting eels that reach the upper end of the ladders, and also night time observations of eel movement. In Phase 2 studies, marked eels are released in batches below the project, and the effectiveness of individual ladders is studied through counting marked eels that ascend each ladder.

The July 23, 2009 order requires that you provide a draft of your report on Phase 1 studies to the U.S. Fish and Wildlife Service (FWS) and the Massachusetts Division of Fisheries and Wildlife (MDFW) for comment, and then file a final Phase 1 report with the Commission by February 28, 2010. The Phase 1 report is to include an assessment of the need to replace the North Dam eel ladder, and information on the planned Phase 2

¹ 128 FERC ¶ 62,054 (2009).

² Order Modifying and Approving Comprehensive Fish Passage Plan Pursuant to License Article 404 and Requiring Further Actions. 115 FERC ¶ 62,091 (2006).

study, including how study eels are to be marked. The final Phase 1 report is to include copies of comments from the agencies on the draft Phase 1 report provided them.

On June 9, 2010, you filed a schedule for the completion of actions related to article 404, including Phase 2 upstream eel passage studies and reports. Your schedule was approved in an order issued June 30, 2010.³ Under that schedule, the Phase 2 study would be conducted in the period of August through October 2010. A draft Phase 2 report would be submitted to the agencies by December 31, 2010, and a final Phase 2 report would then be filed with the Commission by January 28, 2011.

Phase 1 Report

According to your Phase 1 report, passability at the project's south ladder was found to be 100 percent within one day of when eels were released at the bottom of the ladder. Passability at the middle ladder was measured at 46 percent within 18 hours of when test eels were released, and 93 percent within 66 hours.

The report indicated that Phase 2 studies would be conducted at the project's south and middle ladders during the period of August through October 2010, and that you were working to replace the ladder at the North Dam. Passability studies would be conducted at the North Dam ladder once it was installed, followed by a Phase 2 study.

You provided copies of comments on the draft report from the MDFW, and also comments received from Trout Unlimited (TU). Comments from FWS, dated March 4, 2010 were provided later. These entities noted that the Phase 1 studies showed that upstream eel passage improved in 2009 over previous years, likely due to improved water supply to the ladders. They also indicated that it would be valuable to continue eel counting to further assess the design and operation of the facilities. The MDFW and TU recommended that Phase 2 study eels be marked with visible implant tags, a suggestion that you adopted. The FWS provided recommendations on the number of eels to be used in the Phase 2 study, based on factors that can affect eel recapture studies. The agencies and TU also commented that tests at North Dam should not be delayed.

Status of Upstream Eel Passage and Phase 2 Studies

We discussed the current status of upstream eel passage and testing at the project with you via telephone on August 16, 2010.⁴ You indicated that replacement of the

³ Order Approving Schedule for Completing Actions Pursuant to License Article 404 and Approving Revised Downstream Salmon Smolt Passage Effectiveness Study Pursuant to Article 404. 131 FERC ¶ 62,275 (2010).

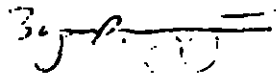
⁴ August 16, 2010 telephone conversation between Peter Clark, project representative, and B. Peter Yarrington, Commission staff.

North Dam eel ladder had been recently completed, and a study had demonstrated good passability there. You are working to begin Phase 2 studies of the three ladders, and are working to complete tagging of the study eels. We discussed the FWS's March 4, 2010 recommendation regarding the number of eels to be used in the Phase 2 study, and you indicated that you would consult with the FWS to be sure the recommendation is addressed.

Thank you for filing your Phase 1 study report with the Commission, and for your time on the phone on August 16. The report fulfills the filing requirement contained in paragraph (B) of the Commission's July 23, 2009 order. Please continue to work with the resource agencies as you proceed with the Phase 2 eel passage study, and inform the Commission of any issues that arise that may interfere with the study or the study reporting. We look forward to reviewing your final Phase 2 report, to be filed with the Commission by January 28, 2011.

If you have any questions concerning this letter, please contact me at (202) 502-6129.

Sincerely,



B. Peter Yarrington
Fisheries Biologist
Division of Hydropower Administration
and Compliance

cc: John P. Warner
U.S. Fish and Wildlife Service
New England Field Office
70 Commercial Street, Suite 300
Concord, NH 03301

Donald Pugh
Trout Unlimited
10 Old Stage Road
Wendell, MA 01379

Alfred Nash
Renewable Power Consulting, PA
P.O. Box 195
Palmyra, ME 04965

Caleb Slater
Massachusetts Department
of Fish and Wildlife
1 Rabbit Hill Road
Westboro, MA 01581

Robert Kubit
Massachusetts Division of
Environmental Protection
67 Main Street, 2nd floor
Worcester, MA 01608

APPENDIX C

KEY EMAIL COMMUNICATIONS

Patricia B. McIlvaine

From: Patricia B. McIlvaine [pbm@wright-pierce.com]
Sent: Tuesday, March 02, 2010 8:38 AM
To: 'robert.kubit@state.ma.us'
Subject: Woronoco Hydro LIHI Certification
Attachments: LIHI Criteria 9-2004.pdf; WQC issued 092900.pdf

Dear Mr. Kubit

Thank you for taking my call yesterday. I have attached the documents I promised to forward to you, namely the Low Impact Hydropower Institute's criteria for achieving certification as a "low impact hydro" and the Water Quality Certificate issued to the Woronoco Project (FERC #2631) on Sept 29, 2000. Note that the WQC was issued to International Paper. However the FERC license for this project was transferred to Woronoco Hydro LLC on May 21, 2001 and the new FERC license issued on April 30, 2002 to Woronoco Hydro LLC incorporates the requirements of this WQC. I understand that although you provided some input on the certification of this project to me yesterday, that you intend to review your files on this project and submit additional comments to the LIHI.

I have a few additional questions regarding this project's review. I would appreciate hearing from you on these questions, either by email or telephone. My number is noted below.

1) To your knowledge, is the area of the Westfield River immediately downstream of the Woronoco Project still in compliance with its water quality classification as Class B? If not, is the Woronoco Project known to be a contributor to the problem?

2) The WQC requires notification to your office if there are any deviations from the minimum flow and head pond level requirements at this project. Has your office received any such notices since the new FERC license was issued in 2002?

Thanks for your assistance. I look forward to hearing from you.

Pat

Pat McIlvaine | Project Manager

Wright-Pierce | Water, Wastewater & Infrastructure Engineers
www.wright-pierce.com

99 Main Street | Topsham, ME 04086
Tel 207.725.8721 x.3785 | Fax 207.729.8414

Serving New England for Over 60 Years

Patricia B. McIlvaine

From: Patricia B. McIlvaine [pbm@wright-pierce.com]
Sent: Tuesday, March 02, 2010 2:39 PM
To: 'Brona.Simon@state.ma.us'
Subject: Inquiry regarding Woronoco's Application to LIHI

Dear Ms. Simon

I have been hired to conduct the independent review of the application submitted by Woronoco Hydro LLC for certification by the Low Impact Hydropower Institute. The project being reviewed is the Woronoco Hydropower station located in Russell MA on the Westfield River. One part of my review is to determine through agency consultation, if there are any known issues associated with the Woronoco project regarding compliance with license conditions and resource agency recommendations on a variety of issues. My questions to you deal with historical/cultural resources. I realize you were not the individual originally involved with this project, but I was hoping you can provide me input nonetheless.

Bases on my review of the material on this project, it appears that two features are eligible for inclusion on the National Register of Historic Places, namely the station powerhouse and the adjacent Strathmore Mill. However, in letters to FERC dated May 2, 1997 and May 18, 1999, signed by Ms. Judith McDonough, the former SHPO, your office found that the project as planned would have no impacts to such features. The FERC license issued to Woronoco Hydro LLC dated April 30, 2002 requires that your office be consulted prior to any ground disturbance or alterations to these listed features. Such consultation would result in a Plan developed by Woronoco Hydro LLC to carry out the needed actions in a manner that would prevent/minimize impacts to the cultural features. Also, if "significant undiscovered properties" are found at the project site, your office would similarly be consulted.

My questions to you are:

- 1) Has your office been involved in any consultations as requested by Woronoco for this project? If yes, were the activities conducted by Woronoco done in compliance with any Plan developed in response to the requested consultation?
- 2) Has the status/classifications of either of the identified features been changed since 1999?
- 3) Have any additional cultural/historical features been identified for this site since 1999?
- 4) Have you any concerns regarding the Woronoco Project in terms of the projects operations on cultural/historical resources?

I appreciate your assistance on this information. Your input is important to my review of the project for certification eligibility under LIHI's process. Please feel free to respond by either email or by calling me at the number listed below. If you have any questions regarding my inquiry, please give me a call. If you need a copy of the referenced letters, please let me know. A timely response would be appreciated.

Pat McIlvaine

Pat McIlvaine | Project Manager

Wright-Pierce | Water, Wastewater & Infrastructure Engineers
www.wright-pierce.com

99 Main Street | Topsham, ME 04086
Tel 207.725.8721 x.3785 | Fax 207.729.8414

Serving New England for Over 60 Years

3/2/2010

March 2, 2010
WP Project No. 12004

Secretary of the Commonwealth
Massachusetts Historical Commission
220 Morrissey Boulevard
Boston, MA 02125-3314

Attn. Ms. Brona Simon
State Historic Preservation Officer

Subject: Inquiry on behalf of the Low Impact Hydropower Certification Institute
Woronoco Project FERC #2631

Dear Ms. Simon;

I have been contracted to conduct the independent review of the application submitted by Woronoco Hydro LLC (Woronoco) for certification by the Low Impact Hydropower Institute. The project being reviewed is the Woronoco Hydropower station located in Russell MA on the Westfield River. One part of my review is to determine through agency consultation, if there are any known issues associated with the Woronoco project regarding compliance with license conditions and resource agency recommendations on a variety of issues. My questions to you deal with historical/cultural resources. I realize you were not the individual originally involved with this project, but I was hoping you can provide me input nonetheless.

Bases on my review of the material on this project, it appears that two features are eligible for inclusion on the National Register of Historic Places, namely the station powerhouse and the adjacent Strathmore Mill. However, in letters to FERC dated May 2, 1997 and May 18, 1999, (see attached) signed by Ms. Judith McDonough, the former SHPO, your office found that the project as planned would have no impacts to such features. The FERC license issued to Woronoco Hydro LLC, dated April 30, 2002, requires that your office be consulted prior to any ground disturbance or alterations to these listed features. Such consultation would result in a Plan developed by Woronoco Hydro LLC to carry out the needed actions in a manner that would prevent/minimize impacts to the cultural features. Also, if "significant undiscovered properties" are found at the project site, your office would similarly be consulted.

My questions to you regarding this project are:

1) Has your office been involved in any consultations as requested by Woronoco for this project? If yes, were the activities conducted by Woronoco done in compliance with any Plan developed in response to the requested consultation?

Ms. Brona Simon
March 2, 2010
Page 2 of 2



- 2) Has the status/classifications of either of the identified features been changed since 1999?
- 3) Have any additional cultural/historical features been identified for this site since 1999?
- 4) Have you any concerns regarding the Woronoco Project in terms of the project operations on cultural/historical resources?

I appreciate your assistance on this inquiry. Your input is important to my review of the project for certification eligibility under LIHI's process. Please feel free to respond by either email (PBM@wright-pierce.com), mail or by calling me at 207-798-3785. If you have any questions regarding my inquiry, please give me a call.

Sincerely yours,

A handwritten signature in cursive script that reads "Patricia McIlvaine".

Patricia McIlvaine
Project Manager

encl.

FILED
OFFICE OF THE SECRETARY

97 MAY -8 PM 4: 19



ORIGINAL

GENERAL COUNCIL
REGULATORY
COMMISSION

The Commonwealth of Massachusetts
William Francis Galvin, Secretary of the Commonwealth
Massachusetts Historical Commission

May 2, 1997

Jon M. Christensen
Kleinschmidt Associates
75 Main Street, Box 576
Pittsfield, ME 04967

RE: Woronoco Hydroelectric Project, International Paper Company, Russell, MA
(FERC No. 2631; MHC No. 5721) ✓

Dear Mr. Christensen:

Thank you for submitting the Initial State Consultation Document (ISCD) for the proposed FERC-licensed project referenced above. The proposed project area includes the Strathmore Paper Company Powerhouse and Mill complex which are eligible for listing in the State and National Registers of Historic Places.

MHC staff understand that the proposed project involves increasing the headpond, excavating the tailrace, and adding a 2.0 MW adjustable propeller unit in the powerhouse.

After review of this information, I concur that this project will have no effect on the significant architectural and historical characteristics of the National Register-eligible property.

These comments are provided to assist in compliance with Section 106 of the National Historic Preservation Act of 1966, as amended (36 CFR 800) and Massachusetts General Laws, Chapter 9, Sec. 26-27c, as amended by Chapter 254 of the Acts of 1988 (950 CMR 71.00).

If you have additional questions, please contact Allen Johnson of this office.

Sincerely,

A handwritten signature in cursive script that reads "Judith B. McDonough".

Judith B. McDonough
Executive Director
State Historic Preservation Officer
Massachusetts Historical Commission

cc: Federal Energy Regulatory Commission
Russell Historical Commission

9706050638-3

FERC DOCKETED

MAY 8 1997

220 Morrissey Boulevard, Boston, Massachusetts 02125 · (617) 727-8470
Fax: (617) 727-5128 TDD: 1-800-392-6090

A handwritten signature in cursive script, likely belonging to a staff member of the FERC or the Historical Commission.



CR 3

FILED
OFFICE OF THE SECRETARY

99 MAY 24 PM 2:25

The Commonwealth of Massachusetts
William Francis Galvin, Secretary of the Commonwealth
Massachusetts Historical Commission

FEDERAL ENERGY
REGULATORY COMMISSION

May 18, 1999

Jon M. Christensen
Kleinschmidt Associates
75 Main Street, P.O. Box 576
Pittsfield, ME 04967

RE: Woronoco Hydroelectric Project, International Paper Company, Russell, MA (FERC No. 2631)
MHC #RC.5721

Dear Mr. Christensen:

Thank you for submitting the Draft Application for New License for the Woronoco Hydroelectric Project. The project area includes the Strathmore Paper Company Powerhouse and Mill Complex, which are eligible for listing in the State and National Registers of Historic Places.

After review of the application, I concur that the project will have no effect on the significant architectural and historical characteristics of the National Register-eligible property.

These comments are offered to assist in compliance with Section 106 of the National Historic Preservation Act of 1966 (36 CFR 800) and Massachusetts General Laws, Chapter 9, Sections 26-27C, as amended by Chapter 254 of the Acts of 1988 (950 CMR 71). If you have any questions, please feel free to contact Gary Hammer or Eric Johnson of my staff.

Sincerely,

Judith B. McDonough
Executive Director
State Historic Preservation Officer
Massachusetts Historical Commission

Xc: Federal Energy Regulatory Commission
Russell Historical Commission

220 Morrissey Boulevard, Boston, Massachusetts 02125 • (617) 727-8470
Fax: (617) 727-5128 • TDD: 1-800-392-6090
www.state.ma.us/sec/mbc

FERC DOCKETED

MAY 24 1999

99060102263

Patricia B. McIlvaine

From: Holt, Emily (FWE) [Emily.Holt@state.ma.us]
Sent: Wednesday, March 10, 2010 2:55 PM
To: 'pbm@wright-pierce.com'
Subject: RE: Questions on Woronoco Project for LIHI Certification
Attachments: Drawdown Relocation Protocol_Draft.doc

Hi Patricia,

Thank you for contacting the NHESP. I'll try to answer your questions below.

- 1) I'm not aware of any activity associated with the Woronoco Project since 2001. I can't find any record that they have contacted us since the 2001 drawdown.
- 2) Their drawdown relocation protocol is similar to what we would do today, but the present draft (attached) has additional details.
- 3) We do not have a state recovery plan, but if we did, and if they followed our relocation protocols, it would be in compliance.
- 4) We are not aware of any new species discovered in the project area.
- 5) NHESP is not planning on providing written comment to the Low Impact Hydropower Institute. However, I believe Caleb Slater already commented on behalf of the Division.

Feel free to contact me directly if you have any additional questions.

Thank you,
Emily

Emily Holt | Endangered Species Review Assistant
Natural Heritage & Endangered Species Program
MA Division of Fisheries & Wildlife
One Rabbit Hill Road | Westborough, MA 01581
ph. (508) 389-6361 | fax. (508) 389-7891
www.nhesp.org

From: Patricia B. McIlvaine [mailto:pbm@wright-pierce.com]
Sent: Tuesday, March 02, 2010 10:32 AM
To: 'henry.woolsey@state.ma.us'
Subject: Questions on Woronoco Project for LIHI Certification

Dear Mr. Woolsey

I have been hired to conduct the independent review of the application submitted by Woronoco Hydro LLC for certification by the Low Impact Hydropower Institute. The project being reviewed is the Woronoco Hydropower station located in Russel MA on the Westfield River. One part of my review is to determine through agency consultation, if there are any known issues associated with the Woronoco project regarding compliance with license conditions and resource agency recommendations on a variety of issues. My questions to you deal with protected species.

3/10/2010

You are listed on the Service List for this FERC licensed projects (FERC # 2631) for the NHESP. Other program individuals involved in this project which received its FERC license in 2002 include Patricia Huckery and Nancy Putnam (neither of whom appear on your staff directory at this time.)

Based on my review of materials for this project, there were two Species of Special Concern potentially or known to exist in the area of this Project...the Triangle Floater and Creeper. Both are still listed by NHESP as this classification. Creeper mussels were found during a mussel survey done in 2001 in response to a planned impoundment drawdown. No federally protected species were reported in the area based on the Environmental Assessment for the project completed in Feb 2002.

Woronoco is required to consult with NHESP prior to impoundment drawdown and to follow a established Standard Operating Procedure for Relocation of Freshwater Mussels in the Project Impoundment. (Copy attached.) Draw downs appear to have occurred twice in 2001, once in August and once later in the fall (I am still trying to confirm this later occurrence.) Apparent miss-communication occurred during the August drawdown whereby the drawdown was conducted before all information was provided to your office. However the file material I have includes a letter dated Oct. 2, 2001 (copy attached) which indicate that no impacts to the listed species were expected.

My questions to you are:

- 1) Have there been any concerns associated with the Woronoco Project since 2001 regarding impacts to protected species? Have any additional draw downs occurred for which NHESP was consulted?
- 2) Does the attached Standard Operating Plan for mussel recovery still meet your requirements?
- 3) Are there any state developed "species-specific recovery plans" for the Triangle Floater and/or Creeper? If yes, to your knowledge, is the Woronoco Project in compliance with these?
- 4) Are there any newly discovered protected species in the area of this project?
- 5) Are you planning on providing written comment to the Low Impact Hydropower Institute on Woronoco's certification application?

I appreciate your assistance in acquiring this information. Your input is important to my review. Please feel free to respond by email or by calling me at the number listed below. A prompt reply would be greatly appreciated. Please don't hesitate to call if you have any other questions regarding this review process or this project.

Pat

Pat McIlvaine | Project Manager

Wright-Pierce | Water, Wastewater & Infrastructure Engineers
www.wright-pierce.com

99 Main Street | Topsham, ME 04086
Tel 207.725.8721 x.3785 | Fax 207.729.8414

Serving New England for Over 60 Years

Patricia B. McIlvaine

From: Peter Clark [pclark@swiftriverhydro.com]
Sent: Wednesday, March 10, 2010 1:12 PM
To: 'Patricia B. McIlvaine'
Cc: bwhalley@swiftriverhydro.com; wbailey@swiftriverhydro.com; wdobbs@swiftriverhydro.com
Subject: FW: Additional Questions regarding your LIHI Certification
Attachments: FERC Environmental Inspection Report 20090625-0203(21012561).pdf

Dear Patricia:

Here are a few answers to your questions. If we have further documents, they will be forwarded later this week. Please read below:

Begin forwarded message:

From: "Patricia B. McIlvaine" <pbm@wright-pierce.com>
Date: March 2, 2010 1:40:00 PM EST
To: "pclark@swiftriverhydro.com" <pclark@swiftriverhydro.com>
Subject: Additional Questions regarding your LIHI Certification

Dear Mr. Clark

I have come up with the following questions during my continuing review of the Woronoco Project for LIHI certification. Hopefully you have received my earlier email dated Feb. 24, 2010. I look forward to hearing from you and receiving the requested documents. I apologize for the number of questions but I want to be sure that this review is complete.

- 1) In reviewing the information regarding impoundment drawdowns and compliance related items, can you tell me if the drawdown that was planned for late October 2001 (see letter dated 9/24/01 to NHESP) ever occurred?

Yes, we drew the impoundment down twice; first to inspect the dam's deep gates and to evaluate and take measurements of the intake structures (racks, their support beams (90 year old wooden beams and wooden horizontal penstock gate). The second drawdown was to build a stoplog gate so that the forebay could be dewatered in the future without needing to lower the head pond as the previous owner International Paper Company (IPC) had done about twice each year for the previous 90 years. These drawdowns were fully permitted with MADEP, US Corp, USFWS, MDFW, Russell ConCom, and NHESP, etc. so everything was in order. That is why after the first drawdown where we took measurements and took stock of the scope of the restoration work required, it took about 3-4 months before Woronoco received the permits needed to drawdown the impoundment long enough to build to construct the stoplog gate structure to control the lake waters in the future. We have not had to lower the impoundment since then except for a few hours to fix a broken gate stem. After that, Woronoco has closed the stoplog gates on several occasions for rehab and maintenance of fish passage facilities and other activities, including a complete rebuild of the intake works, building new trash racks, installation of an automatic intake roller gate, reconstructed the head works, modifying fish passage facilities such as testing an angled lead to direct smolt to the passage chute, etc. We dried out the penstock for a nine month period when contractors were able to reline the entire penstock and SRHOCO refurbished three turbine generator sets in the powerhouse. This was the first major overhaul of the hydro project in 90 years. In 2010, Woronoco will take down its 90 year old rackhouse to make way for a Cross Machine automatic trash rake so that frazil ice will be broken up on winter

3/10/2010

nights and river trash flows will no longer shut down the station. Woronoco will be installing new ¾" bar spaced anti-entrainment overlays this month using the stoplog gates to dry out the intake area in time to prevent smolt from being entrained in the turbines during the April to June smolt passage season. Woronoco will also relocate the entrance of the fish passage facility from the side of the forebay to be inserted into the trash racks in July 2010. This design should speed fish passage of smolt and adult eels past the Woronoco dam. At the same shutdown, we will install the Cross Machine rake.

If so, was a second mussel survey completed and was this report issued to NHESP?

The second drawdown also involve preventive measures to search for mussels, but we found only one or two because those that had been placed back in the deep water, remained in their new habitat. We called in our findings and were told that no further reporting was necessary.

2) Your application stated that no impoundment drawdowns were made since the stop log gate have been installed. Could you tell me when this installation occurred?

The stoplog structure was installed between December 2001 and January 2002.

Where there any other impoundment drawdowns made between the one(s) in 2001 and stop log gate installation?

No, only the two described above.

Is the SOP for Mussel Relocation you submitted in Appendix I the most current for the Project? I am asking because it references the FERC license which expired in September 2001 and does not address the new FERC license or Water Quality Certificate.

Yes, we have not draw down the impoundment or needed to use the Mussel Relocation procedure since FERC issued Woronoco's new license. Resource agencies approved a similar procedure for our Indian River Power Supply hydro plant where we drew down the impoundment to dredge silt from the forebay of that station, which is located about one mile upstream of Woronoco.

Also, the WQC, Item #9 requires that " the applicant develop and implement a mussel and fish stranding protection plan during maintenance drawdowns within one month of license issuance." (Underline added.) The SOP you provided only addresses mussels. If there is a more current version which includes fish stranding, can you please forward me a copy?

Woronoco does not have a new SOP with a fish stranding procedure, but Indian River did prepare a plan for MDEP when it drew down its impoundment. Woronoco has not had an occasion where an agency requested such a plan and with the functioning stop log gate, Woronoco does not need an established fish stranding procedure.

If not, was the need for a fish stranding protection plan dismissed by the MEDEP?

Yes, to the best of my knowledge, this was the case. I checked to see what transpired at IRPS with regard to fish stranding. When the drawdown started, we had MEDEP inspectors on site to evaluate the impact when Indian River lowered the impoundment last fall. However, only two mussels were found and they were put back in the tread of the river. No fish were found stranded in pools which we inspected going upstream almost a mile.

If so, do you have any documentation that demonstrates this?

None for Woronoco Hydro. The Westfield River has a fairly shallow gradient in this section of the river, so there are no large pools where fish might be stranded. Instead,

the river continues to flow winding among sand bars that line the sides of the impoundment. The resident fish must stay in the center of the river so that as it lowers they are not stranded. At Indian River, the MADEP inspectors found no evidence of fish stranding, nor any mussels on the side of the river.

4) The recreation plan you provided in Appendix J is dated May 2, 2003 and is the submittal made to FERC. I could not locate FERC's approval of the Recreation Plan. Could you please forward me a copy or tell me the date the Order was issued and any Orders that may have extended the implementation date of these recreational facilities?

Woronoco never heard from FERC about its approval of the Recreation Plan that Woronoco filed. During a recent FERC site visit in late May of 2009, the FERC inspector reviewed the Recreation Plan with the operations crew and wrote a report on the compliance with the Plan. I will get that report and attach it to this e-mail. Woronoco was order to change the wording on certain signs in the recreation area, including installing a warning sign on the side of a State bridge. This new sign has been made, but until it is safe to put a boat into the river to safely install the a sign on the upstream side of the bailey bridge, we have not been able to send NYRO proof of Woronoco's compliance with the recommendations of the NYRO FERC inspector.

Could you please inform me of the status of implementation of the five facilities specified in this plan and in Article 408 of your FERC license?

The five facilities specified in the Recreation Plan were built in 2003 and 2004. They have been inspected during each FERC inspection since then, and especially this spring during a special FERC inspection mentioned above of the Recreation Area where the inspector visited the recreation area, canoe takeout for the portage route and then walked the canoe portage route and commented on the path back to the river below the powerhouse.

I noted that the Inspection Report by FERC dated June 25, 2009 notes under Comments that "the licensee is finalizing the installation of recreational enhancements at the project including the canoe take-out, rest stops and trail and associated parking areas". This suggests that not all had been completed as of the May 2009 inspection.

All of the items mentioned in that letter have been in place for years. I was not on the site walk with FERC inspector, so I don't know why he used the "is finalizing" phrase to describe what he inspected. I have asked those on the site walk to comment. We will install the sign on the bridge and inform FERC when flows slow down. Ice has come out of the river and we will be dewatering to install the new ¾" racks next week. The sign on the bridge will be installed shortly after that before the annual canoe race where Woronoco's recreation area is the end of race take out point.

Thanks again for your attention to this request. I would appreciate hearing from you at least confirming that you have received my emails so that I know they are reaching you.

Pat McIlvaine

Pat McIlvaine | Project Manager

Wright-Pierce | Water, Wastewater & Infrastructure Engineers
www.wright-pierce.com

99 Main Street | Topsham, ME 04086
Tel 207.725.8721 x.3785 | Fax 207.729.8414

Serving New England for Over 60 Years

Checked by AVG - www.avg.com

Version: 8.5.435 / Virus Database: 271.1.1/2720 - Release Date: 03/03/10 07:34:00