

**Review of Application
For
LIHI Certification of the
Worumbo Hydroelectric Project
Lisbon Falls, Maine**

**Prepared by
Fred Ayer, Executive Director**

Introduction

This report reviews the application submitted by the Miller Hydro Group (applicant or MHG) to the Low Impact Hydropower Institute (LIHI) for Re-Certification for the Worumbo Hydroelectric Project (project or facility) on the Androscoggin River, Lisbon Falls, Maine.

Note on Timing of This Application: The Miller Hydro Group (MHG), operators of the Worumbo Project (LIHI Certificate #10 - Androscoggin River, Maine, FERC #3428) want to accelerate the expiration date of their current LIHI certificate which expires on February 19, 2009, and file right away for a renewal or re-certification of their project. Since most of MHG's customers prefer longer term contracts for the renewable energy certificates (RECs) they purchase, accelerating the expiration to 2008 (which makes the new expiration date 2013), will allow MHG the right to offer their customers RECs from a project whose certification would not expire for five years. MHG's request for accelerating the expiration date was brought to the LIHI Board. The Board agreed to accept their application for re-certification of the Worumbo Project. Assuming the Board recertifies the project, the existing certificate would expire on the effective date of the new certificate.

Overview

The Federal Energy Regulatory Commission (FERC) issued a 40-year license on December 24, 1985. FERC subsequently issued an "Order Approving and Modifying Minimum Flow Release Plan and Amending License" on January 26, 1994 and an "Order Amending License" on August 13, 1998 addressing the applicant's request to raise the headpond elevation 1.5 feet and to allow headpond fluctuations of that amount. The project (FERC 3428) has an installed capacity of 19.4 MW.

The project and the surrounding area are described in FERC's 1998 Environmental Assessment¹ and the following descriptions are from that document.

The project is located on the Androscoggin River in the Towns of Lisbon and Durham, Androscoggin County, Maine. This part of southwestern Maine is a hilly, rural residential area

¹ FERC. 1998. Environmental Assessment: Application for Amendment of License. Worumbo Hydroelectric Project, FERC Project No. 3428-080, Maine. August 1998.

that includes scattered farms and commercial establishments. Lands adjacent to the reservoir are primarily undeveloped upland habitat of hardwoods with softwoods understory.

The Androscoggin River flows 164 miles from its source at Umbagog Lake to tidewater at Brunswick Dam. The river drains a 3,450-square-mile area. Based on flows measured at the U.S. Geological Survey gauge at Auburn, Maine, Androscoggin River flows at the Worumbo Dam have ranged from 356 cfs to 142,000 cfs. The mean annual flow at the project is 6,296 cfs; the estimated 7-day average low flow that has a 1 in 10 year recurrence (7Q10) is approximately 1,680 cfs. Project flows are controlled primarily by the operation of two upstream hydropower facilities, the Gulf Island Project (approximately 19 miles upstream) and the Lewiston Falls Project (14.5 miles upstream).

The project impoundment supports populations of largemouth bass, smallmouth bass, pickerel, yellow perch, and assorted non-game species, including white sucker and spottail shiner. In addition, runs of anadromous fish, primarily American shad and alewives, use the project's fishways. No federally listed threatened or endangered aquatic species exist in the project area; nor do federally listed threatened or endangered wildlife species inhabit the project area. Atlantic salmon, listed as endangered in 2000, are classified as extirpated in the Androscoggin. However, very small numbers of salmon stray into the river and use the project fishways.

The rebuilt Worumbo Mill is situated adjacent to the project powerhouse. The Worumbo Mill was listed in the National Register of Historic Places (NRHP); after a fire in 1987 destroyed the building, it was removed from the list.

Project Description

The Worumbo Project consists of a dam/spillway, consisting of a gated flood spillway, a concrete ogee spillway with crest elevation at 97 feet mean sea level (msl) with two-foot-high hinged flashboards, a center rock ledge section containing a concrete dike with a crest elevation at 97 feet msl with two-foot-high hinged flashboards, and a 520-foot-long rock-filled timber crib dam with a crest elevation at 97 feet msl with 1.5-foot-high pneumatically operated crest gates; an intake section; and an integral powerhouse equipped with two turbine-generator units having a rated total capacity of 19.4 MW at a net operating head of 30.5 feet. The crest gate/flashboard system is designed to fail when overtopped by two feet of water. The dam creates an impoundment with a surface area of 190 acres at a normal full pond elevation of 98.5 feet msl.

The project is generally operated as a run-of-river facility, with outflow approximately equal to inflow on an instantaneous basis. The project is also operated to provide seasonally-varied minimum flow releases into the 850-foot-long bypassed river reach between the Durham-side dam and the end of the tailrace training wall. Current operation permits the impoundment to be drawn down by a maximum of 1.5 feet to allow the owner to maximize the energy and capacity of the project, to provide short-term reserve capacity to the interstate power grid, and

to provide ancillary services (i.e., Automatic Generation Control) to the power grid. Minimum flow releases from the project are maintained at 1,700 cfs or inflow, whichever is less, during impoundment refilling.

General Conclusions

The project location, design, and operation have resulted in a facility that is consistent with LIHI criteria. The applicant conducted comprehensive agency consultations as part of applications in 1991 and 1998 to amend the project license. The resource agency staff contacted by the Application Reviewer did not express concern about project operations or changes since the 1998 negotiations and license amendment. Agency staff are generally complimentary of the operator and the annual meeting process. The primary issues of ongoing interest are compliance with license-required bypass flows, flow fluctuations, and monitoring and reporting on bypass flows. Fish passage is an issue that will likely receive more agency attention should salmon and other anadromous fish populations warrant. The applicant and agencies are in the very early stages of discussing possible refinements to passage timing and operations. At present, however, the agencies agree that the applicant is providing suitable fish passage.

Recommendations

Based on review of information submitted by the applicant, including FERC Orders and agency letters, and conversations with resource agency staff, the review concludes that the Worumbo Hydroelectric Project meets all the certification criteria as described below and recommends certification.

LIHI HYDROPOWER CERTIFICATION CRITERIA

Goals, Standards and Applicant's Responses

The Low Impact Hydropower Institute certifies those hydropower facilities that meet its eight 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 recommendations² 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.*

YES.

On December 30, 1991, the applicant filed with FERC the results of an instream flow study and recommendations for changing the project's minimum flow requirements. The study of minimum flows, including impacts of interim minimum flows to fish habitat in the 850-foot-long bypass reach between the Worumbo Dam and the powerhouse, was required by Article 32 of the 1985 FERC license. The applicant conducted the study, analyzed results, and developed recommended flows, in consultation with resource agencies. The applicant's filing included a seasonal flow schedule and offsite mitigation in the form of an annual payment to the Maine Department of Inland Fisheries & Wildlife for a fisheries management program in the Lower Androscoggin River Basin. On January 26, 1994, FERC issued an "Order Approving and Modifying Minimum Flow Releases and Amending License." The Order contained the recommendations negotiated between the applicant and participating resource agencies, as well as requirements to monitor flow releases and report annually. Agencies consulted included, the U.S. Fish and Wildlife Service, the Maine Department of Marine Resources, the Maine Department of Inland Fisheries & Wildlife, and the Atlantic Sea Run Salmon Commission.

² "recent resource agency recommendations" are defined as final recommendations made by state, federal, or tribal resource agencies in a proceeding, such as a Federal Energy Regulatory Commission (FERC) licensing proceeding. Qualifying agencies are those whose mission includes protecting fish and wildlife, water quality and/or administering reservations held in the public trust. Agencies such as a state or tribal department of fish and game, or the U.S. Fish and Wildlife Service are considered a "resource agency" but the FERC, with its balancing responsibilities, is not. The agency recommendations must be recent, which means they were issued after 1986 (after enactment of the Electric Consumers Protection Act, which amended the Federal Power Act to increase the profile of recommendations from fish and wildlife agencies in the FERC licensing process). If there are a number of resource agency recommendations, then the most stringent (most environmentally protective) is used. In the case of settlement agreements, the final settlement terms will be considered the agency's "recommendation."

The plan, including minimum flows and mitigation funding, were also subject to agency review when the applicant requested another license amendment in 1998. That amendment was requested to raise the headpond 1.5 feet and allow headpond fluctuations of that amount to provide for marketing spinning reserve capacity or limited peaking operation. Comments related to flows were provided in April, 1998 by the Maine Department of Inland Fisheries & Wildlife, Maine Department of Environmental Protection, U.S. Fish and Wildlife Service, and Maine Department of Marine Resources. All of these agencies either concurred with, or did not object to, the requested amendment. No flow modifications were requested at that time and the license amendment was issued with the same terms as the flow plan approved by FERC in 1994. That is, bypass flows remained unchanged. Downstream release below the project (bypass and gate or turbine discharge combined) is required to be 1,700 cfs or inflow, whichever is less, during any headpond refill periods.

Recent conversations with agency staff involved in these proceedings, confirmed this history and the applicant's continued compliance with flow requirements. Most pointed out that annual meetings with the applicant have worked well and that they are satisfied that project operations are consistent with previous agreements and the FERC license requirements.

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 the reach below the tailrace and all bypassed reaches. FACILITY PASSES.

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).

YES (B1a).

The Maine Department of Environmental Protection issued a “Maine Waterway Development and Conservation Act and Water Quality Certification” for the project on July 13, 1998. The Certification identified the applicable state water quality standards and conditionally approved the project modification. In a letter to the applicant dated January 18, 2002, the Department’s

Dana Murch provided a copy of the Compliance Status Report and confirmed project compliance with the 401 Water Quality Certification conditions. Follow up conversations with Dana Murch affirmed that the project remains in compliance with Section 401.

YES.

“Maine currently has a fish consumption advisory for all freshwaters due to the presence of elevated mercury levels in fish tissue, therefore, **all freshwaters are “listed”** due to this contamination problem.”³ The State of Maine also identifies the Androscoggin River at Brunswick, downstream of the project, as Class C for PCBs and dioxins (Water-quality limited waters where enforceable control measures apply – attainment status pending follow-up monitoring). Finally, FERC’s 1998 Environmental Assessment notes that dissolved oxygen (DO) levels downstream of the project are frequently at saturation or supersaturation, well above the required Class C standard of 5 ppm.

YES.

Dana Murch⁴, Maine Department of Environmental Protection, said that the project is not the cause of downstream water quality violations or nonattainment. FERC’s 1998 Environmental Assessment noted that “[w]ater quality monitoring conducted by the licensee from 1990 to 1994 determined that project operation has not affected DO levels in the river below the project dam.”

PASS.

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 downstream reach is not 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. FACILITY PASSES

C. Fish Passage and Protection:

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

³ Maine Department of Environmental Protection. 1998. Maine Section 303(d) Waters 1998. Web link at www.mainerivers.org/pdf/dep_water_quality.pdf.

⁴ Dana Murch. 2004. Personal (telephone) communication with Jan Mulder. April 27, 2004.

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.

Project facilities include an upstream fish lift and a downstream fishway, which provide passage for migrating anadromous fish, including Atlantic salmon, American shad and alewives⁵. These fish passage facilities are part of the FERC license and were reviewed by the resource agencies again in 1991 and 1998 as part of license amendment processes. Fish passage efficiency studies were conducted annually from 1990 through 1995. The runs of alewives being studied were small, and study results were inconclusive. By Order dated November 12, 1998, FERC agreed that further studies should be discontinued until such time as needed⁶.

The U.S. Fish and Wildlife Service⁷, noted that the fish lift and fishway can operate effectively when the headpond elevations are between 97.0 and 98.5 feet msl and that the cycling operations proposed would be “infrequent during the peak upstream migration period (May – June), thus avoiding impacts to anadromous fish due to pulsed discharges.” The Service suggested including discussion of frequency and timing of cycling operations in the annual meetings to determine whether there are any adverse effects on anadromous fish runs. The applicant continues to meet annually with the resource agencies⁸. In addition, the Maine

⁵ Maine Department of Environmental Protection. 1998. Maine Waterway Development and Conservation Act and Water Quality Certification. July 13, 1998.

⁶ Maine Department of Environmental Protection. 1998. Letter with 401 Compliance Status Report from Dana Paul Murch, Dams & Hydro Supervisor, to Bearl S. Keith, Miller Hydro Group. January 18, 2002.

⁷ U.S. Fish and Wildlife Service. 1998. Letter from Michael J. Bartlett, Supervisor, New England Field Office, to Mark Isaacson, Miller Hydro Group. April 27, 1998.

⁸ George Russell and Larry Miller. 2004. Personal (telephone) communication with Jan Mulder. April 29, 2004.

Atlantic Salmon Commission⁹ is working with the applicant to refine timing and operation of the fish lifts.

YES.

There are historic records of anadromous fish movement through the facility area and anadromous fish are present and move through the passage facilities. While there is at least anecdotal evidence that Atlantic salmon were present historically, they are classified as extirpated in the Androscoggin River. However, a few “strays” are present most years and move through the facility¹⁰.

NOT APPLICABLE.

Sources contacted by the Application Reviewer (resource agencies and applicant) were unable to identify the cause of Atlantic salmon extirpation (which occurred well over a century ago), but attribute it to centuries of intense industrial development along the river, including approximately 20 dams on the main stem. Although classified as extirpated, Atlantic salmon pass through the facility. The applicant is working with the Maine Atlantic Salmon Commission to refine timing and operation of the fish lifts for the salmon.

NOT APPLICABLE.

The FERC license requires upstream and downstream fish passage which is in place. Fish passage was reviewed by resource agencies in 1991 and 1998 during consultation to amend the license. The applicant is required to provide fish passage as part of the FERC license.

NO.

At time of project licensing, the applicant reached agreement on fish passage without agencies issuing a Mandatory Fish Passage Prescription¹¹. The resource agencies had chances in 1991 and 1998 to issue a Mandatory Fish Passage Prescription, but did not do so. The agency correspondence submitted by the applicant and the Application Reviewer’s follow up discussions with agency staff indicate that the resource agencies are generally satisfied with the fish passage facilities provided and the annual project meetings which provide a forum for feedback and discussion of operational improvements.

NOT APPLICABLE.

⁹ Paul Christman. 2004. Personal (telephone) communication with Jan Mulder. May 4, 2004.

¹⁰ Paul Christman. 2004. Personal (telephone) communication with Jan Mulder. May 4, 2004.

¹¹ Mark Isaacson. 2004. Personal (telephone) communication with Jan Mulder. May 4, 2004.

The project facilities include an upstream fish lift and a downstream fishway. According to correspondence from the Maine Department of Inland Fisheries & Wildlife¹², fish passage is not required for inland (freshwater) fisheries.

NOT APPLICABLE.

There are no agency recommendations for fish protection, such as tailrace barriers.

PASS.

C. Fish Passage and Protection – The facility is in Compliance with Mandatory Fish Passage Prescriptions for upstream and downstream passage of anadromous and catadromous fish issued by Resource Agencies after December 31, 1986 - FACILITY PASSES.

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.

YES.

¹² Maine Department of Inland Fisheries & Wildlife. 1998. Letter from Frederick B. Hurley, Jr., Deputy Commissioner, to Mark Isaacson, Miller Hydro Group. April 15, 1998.

The 1998 FERC License Amendment required the licensee to monitor the reservoir shoreline for evidence of erosion due to the periodic 1.5-foot reservoir drawdowns. These studies were completed January 16, 2002.

PASS.

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| <p>D. Watershed Protection – The facility is in compliance with both state and federal resource agencies recommendations in a license approved shoreland management plan regarding Protection, mitigation, and enhancement of shorelands surrounding the Project - FACILITY PASSES</p> |
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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.

YES.

According to the 1998 FERC Environmental Assessment, there were no federally listed threatened or endangered aquatic or wildlife species in the project area, nor any state-protected wildlife habitat. Atlantic salmon were listed as endangered in November 2000, but they are classified as extirpated in the Androscoggin River. Nonetheless, Atlantic salmon are present in the facility area, though agency contacts interviewed by the Application Reviewer said that Atlantic salmon are very rare in the Androscoggin River.

NOT APPLICABLE.

Because Atlantic salmon are classified as extirpated in the Androscoggin River, there is no recovery plan.

NOT APPLICABLE.

Atlantic salmon are classified as extirpated in the facility area.

YES.

Atlantic salmon in the Androscoggin River are extremely rare. The agencies who commented in 1998 did not express concerns about fish passage for Atlantic salmon and no concerns were identified in recent discussions. The Atlantic salmon present can, and do, pass through the passage facilities. The applicant meets annually with resource agencies to discuss project operations, including fish passage, and has begun working with the Maine Atlantic Salmon Commission to refine timing and operation of the fish lifts for the salmon.

PASS.

E. Threatened and Endangered Species Protection – Except for the occasional transient no threatened or endangered species or their critical habitat listed under state or federal Endangered Species Acts are present in the Facility area. FACILITY PASSES.

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.

YES.

The Facility is FERC regulated. The State Historic Preservation Officer notified the applicant that the 1998 proposed operating regime would not exacerbate erosion of any archeological sites located above the pool elevation; consequently, the proposed undertaking would not affect properties of historic, architectural, or archeological significance¹³.

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.

Recreation:

¹³ Earle G. Shettleworth, Jr. 1998. Letter to Mark Isaacson, Miller Hydro Group. April 17, 1998.

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.*

YES.

The applicant developed a boat launch facility and picnic area at the mouth of the Sabattus River which provide access to the project reservoir. These facilities were subsequently deeded to the Town of Lisbon and the Town of Lisbon charges no fees for their use. The applicant developed and maintains a canoe portage around the project. Seasonal bank fishing from both the Durham and Lisbon shores is permitted and encouraged. The applicant provided an easement across project land to the next downstream hydroelectric project to further promote bank fishing and access to the Pejepscot reservoir. The applicant is a sponsor of an annual canoe race event in conjunction with the Town of Lisbon "Moxie Days."

YES.

The applicant charges no fees for use of the project facilities described above.

PASS.

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| <p>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.</p> |
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Facilities Recommended for Removal:

Goal: *To avoid encouraging the retention of facilities that 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.

There have been no recommendations for removal of the Facility.

PASS.

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

Note:

The Project meets the requirements of all eight of the criteria, and I recommend that the facility be certified by the Low Impact Hydropower Institute as a LIHI Certified facility.

Prepared by Fred Ayer and submitted on or about June 19, 2008 for LIHI Governing Board action at the June 26, 2008 LIHI Board Meeting.

RECORD OF CONTACTS WITH RESOURCE AGENCY STAFF

Date of Conversation: May , 2008
Application Reviewer: Fred Ayer, Executive Director
Person contacted: Steve Timpano
Maine Department of Inland Fisheries & Wildlife
Telephone/email: Telephone call
Areas of Expertise: Inland (freshwater) fisheries and habitat, instream flows, water quality

Steve has a long project history and is very familiar with the project. He was involved in the 1991 and 1998 agency meetings and negotiations to amend the FERC license. He has participated in the annual meetings and thinks the project is being implemented appropriately and as proposed. Flows in the bypass reach were his agency's primary concern. The applicant has planned periodic flow deviations during appropriate times (from a fisheries standpoint) and has notified agencies in advance. Some of the flow episodes occur as a result of maintenance work (repairs to rubber dam, etc.) and replacing flashboards. The Applicant has done a good job with communications and we receive notice of these occasional flow alterations and usually their seasonal timing has been appropriate.

We have not had complaints and the applicant is very cooperative and prompt in communicating upcoming flow changes.

Date of Conversation: May 30, 2008
Application Reviewer: Fred Ayer, Executive Director
Person contacted: Dana Murch
Maine Department of Environmental Protection
Telephone/email: Telephone call
Areas of Expertise: Water Quality Certification and compliance

Dana and I had a nice talk and we covered §401 and Dana said that, yes, the applicant is in compliance with their 401 Water Quality Certification conditions as stated in his letter of January 18, 2002 and the referenced Compliance Status Report. Water quality standards are being met and there's been no change in compliance status. In response to my question about whether the river in the vicinity of the facility and downstream met water quality standards (applicant had answered "yes" to B2, other information indicated it should be "no"), he said that the river did not meet water quality standards. In fact, few in Maine did. In this case the history of heavy industry and acid rain, both contribute to this situation. But, in response to question B3, he said that the facility is not the cause of the water quality violations.

I asked Dana if the applicant was good to work with. He said, yes and I'm talking about working with Mark and Bearl (the Applicant and his assistant) for 25 years. They are very cooperative.

I asked Dana if there were any other issue that we ought to be aware of. He responded by asking me this question: "I suppose you know about the eels?" I said that I was familiar with the Watts brothers attempt to have eels listed as endangered under the Endangered Species Act, but I told him I thought their petition had been turned down. He said you are right, it has been turned down, but that hasn't diminished the interest in eel passage. Here's an overview: In 2005, Doug Watts along with the Friends of Merrymeeting Bay (FMB) filed a petition asking the Board of Environmental Protection (BEP) to require up and downstream fish passage on all the dams on the Kennebec River immediately. After deliberation the BEP dismissed the petition in February 2006. Undeterred, Watts et al, and others resubmitted their petition with the added "up and down stream fish passage for all fish and eels." which was subsequently dismissed for similar reasons. The petitioners didn't stop and explored their options and eventually ended up in Maine's highest court. They currently have a case pending before the Maine Supreme Judicial Court.

As I understand it, Watts and company are arguing that the fish being able to be free to move up and down stream is in essence part of the §401 state water quality standards. My sense is that Doug has created a great number of enemies, particularly in the Maine environmental conservation organizations and state and federal agencies.

Further, I sense (and so does the state) that the state will prevail in the court case, but also believe that Watts and associates will reappear when there is a case that better suits there interests, a more substance than policy decision.

This really does not seem to have any bearing on Worumbo's status as a LIHI certified project, but bears monitoring in case there are changes in the law or regulations.

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| Date of Conversation: | May 29, 2008 |
| Application Reviewer: | Fred Ayer, Executive Director |
| Persons contacted: | Fred Seavey U.S. Fish and Wildlife Service |
| Telephone/email: | Telephone call |

Fred has been in Maine for two or three years and his predecessors Gordon Russell and Larry Miller who have both moved on were very familiar with the project. The USFWS was involved in negotiating instream flows and supported the off-site mitigation fund. Fred felt that the fish passage works fine, and partly because the fish agencies and the applicant continue to refine and discuss with the applicant the details of implementation. The applicant has coordinated

with the agencies and they meet annually and review project operations. Nothing of significance has changed since 1998. They still have not been able to achieve measuring effectiveness of downstream passage, but this is not because the applicant has not cooperated. Fred praised MHG for their cooperative way of doing business. Fred will be visiting the project on June 6th and has promised an update on anything of significance that arises from that visit.

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| Date of Conversation: | June 2, 2008 |
| Application Reviewer: | Fred Ayer, Executive Director |
| Person contacted: | Mike Brown Maine Department of Marine Resources |
| Telephone/email: | Telephone call |
| Areas of Expertise: | Anadromous fisheries and fish passage |

I had a nice chat with Mike, who corroborated what the other contacts had said. He spends most of his time on the Androscoggin Projects and said that Worumbo was as advertised a good project. He thinks part of the reason that Worumbo works well is that it is a relatively "new" facility and the turbines turn slower than the old Francis type turbine runners and that minimizes downstream mortality. The fish lift works well and the applicant is good to work with and Mike had nothing but praise for the cooperation with DMR requests.

Date of Conversation: May , 2008
Application Reviewer: Fred Ayer, Executive Director
Person contacted: Paul Christman
Maine Atlantic Salmon Commission
Telephone/email: Telephone call
Areas of Expertise: Atlantic salmon

Mr. Christman wasn't around during the initial negotiations, but is familiar with the project and the fish passage facilities. He said that the Commission is in the early stages of working with the applicant to refine the timing and operation of the lifts. He was able to clarify the status of Atlantic salmon. Atlantic salmon were historically present in the Androscoggin River, though the evidence that he is aware of is largely anecdotal and there is no information about size and extent of runs. While the species is listed, it is classified as extirpated on the Androscoggin. However, "strays" appear most years and move through the project area. In response to my question about the cause of extirpation, he said it would be difficult to put a finger on one cause. Certainly the very long history of heavy industry, including numerous dams, likely contributed.

As I'd also left a message for Norm Dube, but knew he was busy, I asked Mr. Christman about calling Mr. Dube. Mr. Christman thought that while Mr. Dube had a long project history, he did not think Mr. Dube would provide new information.

RECORD OF CONTACTS WITH APPLICANT

Date of Conversation: May , 2008
Application Reviewer: Fred Ayer, Executive Director
Person contacted: Mark Isaacson
Miller Hydro Group
Telephone/email: Telephone call
Areas of Expertise: Project information and application documentation

I asked Mr. Isaacson about the Mandatory Fish Passage Prescription. He said that basically they never got to that point with the agencies because they reached agreement first on how to address fish passage. I asked him about any information that might document the cause of extirpation of Atlantic salmon on the Androscoggin River. Mr. Isaacson doesn't think much exists as he believes that the species has not been present in the Androscoggin for over one hundred years. The river is heavily industrialized and there are approximately 20 dams on the main stem. The lowest three dams, of which Worumbo is the highest, all provide fish passage.

The dam immediately upstream of Worumbo was recently relicensed. Fish passage was not required there as that facility is sited at a natural barrier that precluded historic migration.