STATE OF MAINE
BOARD OF ENVIRONMENTAL PROTECTION

IN RE PETITIONS FOR REVOCATION, MODIFICATION OR SUSPENSION OF PERMITS AND WATER QUALITY CERTIFICATIONS FOR THE LOCKWOOD, HYDRO KENNEBEC, SHAWMUT AND WESTON HYDRO PROJECTS

Merimil Limited Partnership Lockwood Hydro Project #L-20218-33-C-N	)))	
Hydro Kennebec Limited Partnership Hydro-Kennebec Project #L-11244-35-A-N	)))	**PRE-FILED REBUTTAL TESTIMONY OF ROBERT C. RICHTER III ON BEHALF OF FPL ENERGY MAINE HYDRO, LLC AND MERIMIL LIMITED PARTNERSHIP (LOCKWOOD, SHAWMUT AND WESTON PROJECTS)**
FPL Energy Maine Hydro, LLC Shawmut Hydro Project #L-19751-33-A-M	)))	
FPL Energy Maine Hydro, LLC Weston Hydro Project #L-17472-33-C-M	)))	

PRE-FILED REBUTTAL TESTIMONY OF ROBERT C. RICHTER III

- Upstream and downstream anadromous fish passage at the Lockwood, Shawmut and Weston Projects.

- Downstream eel passage at the Weston, Shawmut and Lockwood projects.

February 7, 2007

PRE-FILED REBUTTAL TESTIMONY AND EXHIBITS OF ROBERT C. RICHTER III

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PURPOSE AND SCOPE OF REBUTTAL TESTIMONY

The purpose and scope of my rebuttal testimony is to provide additional information and clarification regarding claims made by Friends of Merrymeeting Bay (FOMB) and Douglas Watts in their direct testimony, specifically on the subjects of upstream and downstream anadromous fish passage and downstream American eel passage at the Weston, Shawmut and Lockwood projects on the Kennebec River.

SUMMARY OF REBUTTAL TESTIMONY

In my opinion, Petitioners have not met their burden of proof to demonstrate that the projects pose a threat to human health or the environment, that the owners have violated any laws administered by the DEP, or that there has been a change in a condition or circumstance that requires revocation, suspension or modification of the terms the water quality certifications for the Lockwood, Shawmut or Weston projects.

The petitioners' claim that upstream and downstream passage measures for anadromous species are not adequate at the projects is not supported by any site specific facts. In my professional opinion adequate upstream and downstream passage measures are provided for at the projects in accordance with the KHDG agreement and the water quality certifications for the projects.

The petitioners' claims that significant eel mortality is occurring at the subject dams are not supported by any specific evidence. In my professional opinion, the petitioners have not demonstrated that adequate downstream eel passage is not presently being provided for at the Lockwood, Shawmut and Weston projects through existing measures. As discussed below, FPLE will implement the planned effectiveness studies in 2007 and 2008. If the studies demonstrate that eels are not passing the project(s) effectively via existing interim passage routes, then FPLE will, subsequent to consultation with the resource agencies, provide facilities and or operational modifications to provide cost-effective passage.

Therefore, the Board should deny the petitions.

REBUTTAL OF FOMB'S TESTIMONY

- **Upstream Anadromous Fish Passage**

FOMB's Claims that Trapping and Trucking of Anadromous Species for Upstream Passage is not Effective are Not Supported by the Facts.

FOMB's direct testimony on page 10, ¶ 27 states that, *"To illustrate the inherent inefficiency one need look no farther that DMR's artificial passage through trap and truck, of 100,000 to 140,000 alewives at Fort Halifax on the Sebasticook. Without a dam the estimated 2 million fish population could be expected to migrate naturally upstream."*

FOMB's testimony fails to discuss the fact that the numbers of fish that are trapped and transported from the Fort Halifax facility are not an indication of the efficiency of the passage system, but instead are based upon fisheries management decisions by the DMR.

In fact, the trap and transport system at Fort Halifax has been very effective for stocking alewives in the Kennebec River basin, including stocking many lakes that would otherwise not have been available for alewives in the absence of the trap and transport system.

The fish lift, trap, sort and truck facilities constructed at the Lockwood Project in 2006 are designed to provide safe and effective passage for anadromous species. The effectiveness of trap and truck systems, especially as applicable to the Kennebec River dams that are the subject of this proceeding, are discussed further in the rebuttal testimony of Mr. Kulik.

- **Downstream Anadromous Fish Passage**

FOMB's Concerns for Downstream Passage of Migratory Fish are Adequately Addressed.

FOMB at page 12, ¶ 28, states its concern that "*Fish transported to habitats above dams as part of the state's restocking efforts need to out-migrate.*" The Weston, Shawmut and Lockwood dams all provide interim measures or routes for downstream passage of migratory fish, including anadromous species and American eel. These are discussed in my direct testimony (see Richter Direct, pages 8-10 and 14). To further illustrate the routes that are available for downstream migrants, I attach hereto EXHIBITS FPLE-18 through 31. EXHIBITS FPLE-18 through 22 illustrate the downstream routes available at the Weston Project; EXHIBITS FPLE-23 through 27 illustrate the downstream routes available at the Shawmut Project; and, EXHIBITS FPLE-28 through 32 illustrate the downstream routes available at the Lockwood Project. These routes will be tested to

demonstrate their effectiveness and/or determine the need for additional downstream passage measures (see Richter Direct pages 8-10 and 14-15).

FOMB's direct testimony on page 13, ¶28, claims that "… *there have been massive kills of alewives observed at the Shawmut, Burnham, Benton Falls and American Tissue dams*". The Board should first be aware that only one of these dams, Shawmut, is even on the Kennebec River. Second, the claim at Shawmut is unsupported by the facts; FOMB provides no documentation of a "massive" alewife kill occurring at the Shawmut Project. I am not aware of any "massive" alewife kill at Shawmut. Indeed, if "massive" alewife kills were in fact occurring at Shawmut, certainly there would be documented reports on file with MDMR or other forms of evidence - but in fact there are none. In discussions with Dr. Gail Wippelhauser, a senior fishery biologist at DMR who manages anadromous fish restoration on the Kennebec River, she has stated that she likewise has no knowledge or information about any type of "massive" alewife kill below Shawmut. Similarly, in discussions with Nate Gray, a biologist at DMR, he has stated that he has no information regarding such an alewife kill below Shawmut.

- **Downstream Eel Passage**

FOMB's Claims that Severe Eel Kills Occur at the Subject Dams are Not Supported.

FOMB's direct testimony on page 10, ¶ 23 claims that Gail Wippelhauser, of the Maine Department of Marine Resources (DMR), stated in the November 2004 edition of Northern Sky News that severe eel kills are "*probably happening at every hydro facility on the East Coast that has a run of eels.*" However, Ms. Wippelhauser subsequently

clarified that the quote is simply indicative of her general opinion that some level of eel mortality is probably happening at all hydro facilities. (January 25, 2007 telephone call with Ms. Wippelhauser.) Furthermore, contrary to FOMB's categorization of Ms. Wippelhauser's statements, Ms. Wippelhauser did not state that eel mortalities of similar magnitude to those characterized below Benton Falls are taking place at all hydro projects. Therefore, FOMB took Ms. Wippelhauser's statement from the Northern Sky Newspaper out of context and the statement does not support a conclusion that there is severe eel mortality at the Weston, Shawmut or Lockwood projects. Additionally, I am not aware of any severe eel kills at the Weston, Shawmut or Lockwood projects.

FOMB's Proposed Passage Requirements Are Based on an Unproven Assumption that Existing Passage Measures at the Subject Projects are Not Adequate.

FOMB's direct testimony on page 13, ¶ 30, states that "*Fundamental requirements of safe and effective passage are blocking access to turbines and guiding eels/fish towards an alternative pathway through or around dams.*"

While these proposed actions may be part of the considerations for effective eel passage, there are a number of reasons that the immediate installation of measures to block access to turbines, or to shut down turbines at night, are not warranted at this time. First, FOMB presumes that existing interim passage measures are not adequate. As stated in my pre-filed testimony, FPLE's tailrace observation program has provided meaningful data on the relative abundance of dead or injured eels occurring at each project and this evidence indicates that significant mortality events have not been observed at these projects. (See

Richter Direct, p.13) Thus, there is no evidence that existing interim measures are inadequate.

Also, in 2006, FPLE developed additional plans in consultation with DMR, NMFS and USFWS to study downstream eel passage effectiveness at the Lockwood, Shawmut and Weston projects. These plans were filed with the DEP and FERC on January 12, 2007. The plans call for detailed radio-telemetry studies to be conducted at Lockwood and Shawmut in 2007 and at Weston in 2008 in order to obtain quantitative data on eel migration routes and passage effectiveness at the projects. If the studies demonstrate that eels are not passing the project(s) effectively via existing passage routes, then FPLE will provide facilities and or operational modifications to provide cost-effective passage subsequent to consultation with the resource agencies. These studies are discussed in more detail in my pre-filed direct testimony. (See Richter Direct, p.14-15.)

FPLE's predecessor in ownership of these projects, Central Maine Power Company (CMP), took a similar approach to improve adult and juvenile alewife downstream passage effectiveness at the Fort Halifax Project in the mid-1990s. During the effectiveness studies, CMP identified that adult and juvenile alewives were passing the project via the spillway, via an existing surface spill gate, and via the turbines. In an effort to reduce turbine entrainment of juvenile alewives, CMP conducted studies and experimented with various trash rack screens and operational measures to reduce entrainment. CMP subsequently installed aluminum punch plate screening over the existing trash racks. This approach was approved by the resource agencies and FERC,

and is being implemented at this project on an annual basis. The result, based upon scientific information and design, is effective fish passage for adult and juvenile alewives.

CMP took the same approach to resolve an adult shad downstream passage issue at the Cataract Project on the Saco River in the mid-1990s. During their studies, CMP identified that downstream migrating adult shad were not using an existing surface sluice originally designed to provide downstream passage. CMP conducted studies and experimented with various operational measures to effectively pass shad. CMP subsequently instituted seasonal lowering of two hinged flashboard sections at the project to provide improved passage. This approach was approved by the resource agencies and FERC, and is implemented on an annual basis at the project. The result, based upon scientific information and design, is effective fish passage for American shad.

Additionally, FPLE took the same approach to resolve an Atlantic salmon smolt downstream passage issue at the Bar Mills Project on the Saco River in the early 2000s. During these studies, FPLE identified that downstream migrating salmon smolts were not using an existing surface sluice designed to provide downstream passage. FPLE conducted studies and experimented with various devices to guide smolts towards a surface sluice and away from the turbines. FPLE subsequently installed an eight foot deep floating boom that is successfully guiding smolts to the surface sluice and away form the turbines. This approach was approved by the resource agencies and FERC, and

is implemented on a seasonal basis at the project.[1] The result, based upon scientific information and design, is effective fish passage for Atlantic salmon smolt.

The same personnel involved with the above described Fort Halifax, Cataract and Bar Mills effectiveness studies are presently employed by FPLE. Similar to the above, it is FPLE's intention to conduct the studies necessary to make informed decisions regarding what, if any, additional cost effective measures should be undertaken at each of these projects to pass fish effectively. As noted above, site specific studies found that three entirely different remedies were effective in improving fish passage at the Fort Halifax, Cataract and Bar Mills projects, respectively. In light of these results, simply installing a measure in a hasty manner at any of the Kennebec projects may not be necessary nor effective, and is not a rational response in this case.

REBUTTAL OF DOUGLAS WATTS TESTIMONY

- **Upstream Anadromous Fish Passage**

Mr. Watts' claims that the dams do not provide upstream passage for anadromous species is not supported by the facts.

Mr. Watts direct testimony at page 5, ¶ 19, states that, *"Today, these four dams are completely impassable to these five indigenous migratory fish species [Atlantic salmon, American shad, alewife, blueback herring and sea lamprey] during their upstream migration from the Atlantic Ocean."*

[1] A similar guidance system was installed at the Hydro-Kennebec Project in 2006.

The fact of the matter is that upstream passage for anadromous species is provided for all four dams, Lockwood, Hydro-Kennebec, Shawmut and Weston, by the fish lift, sort and transport facilities constructed at the Lockwood Project in 2006. The lift facility is shown in EXHIBIT FPLE-33. This facility allows anadromous fish to be trapped and sorted by qualified biologists and then transported safely throughout the river basin to appropriate spawning habitat at the direction of DMR and MASC. The effectiveness of this system is discussed by Mr. Kulik in his rebuttal testimony.

- **Downstream Eel Passage**

Mr. Watts' Claims that the Subject Dams Do Not Provide Safe Passage for Adult American Eels is Not Supported by Any Site Specific Evidence.

On page 21, ¶ 46 of his direct testimony, Mr. Watts asserts that the Lockwood, Shawmut and Weston Dams do not provide safe passage for adult American eels. As support for his contention, Mr. Watts' direct testimony on page 22, ¶ 51, references a December 20, 2006 email from Nate Gray (DMR) to Douglas Watts. This email describes some eel observations completed by DMR below the Shawmut project in 2004, specifically;

> *"We had an underwater camera set up and we investigated the east turbine outfalls and tailrace/pool below and saw no eels. Returning to the boat ramp we investigated the south (new) turbine tailrace and found some adults that had most likely been entrained at Shawmut. <u>There were not a lot</u>, perhaps 10 or so and all located within a fairly small area." (Emphasis added.)*

In addition, Mr. Gray provided the following summary of his eel observations below Lockwood in 2006;

> *"We performed four passes (eight one ways) on different lines of drift to see what there was to see. <u>We saw none.</u> There were enough velocity refugia that if there were a significant event I believe we would have seen evidence of entrainment. I also believe (with no substantial evidence, just a gut feeling) that the high water*

may have dealt outmigrant adults a good hand. Multiple passage opportunities specifically at Lockwood with the spillway running constantly."(Emphasis added.)

As described in my pre-filed direct testimony, FPLE has an ongoing tailrace observation program that includes looking for dead and injured eels in the project tailraces. This program began in 2004 and indicates that significant injury or mortality events have not been observed at these projects. (See Richter Direct, p.13-14.)

For example, in 2006 at the Lockwood project, FPLE looked for dead or injured eels via a canoe, under-water camera, and view tubes in the same tailrace vicinity as investigated by DMR. FPLE came up with the same conclusion as DMR, that is, FPLE saw no dead or injured eels in this location, and if there had been a significant mortality event in this location then FPLE would have seen evidence of this event. The findings of this program are more fully detailed in my direct testimony.

FPLE's tailrace observation program has provided meaningful data on the relative abundance of dead and injured eels occurring at each project; this evidence indicates that significant injury or mortality events have not been observed at these projects.

CONCLUSION

In my opinion, Petitioners have not met their burden of proof to demonstrate that the projects pose a threat to human health or the environment, that the owners have violated any laws administered by the DEP, or that there has been a change in a condition or

circumstance that requires revocation, suspension or modification of the terms the water quality certifications for the Lockwood, Shawmut or Weston projects.

The petitioners' claim that upstream and downstream passage measures for anadromous species are not adequate at the projects is not supported by any site specific facts. In my professional opinion adequate upstream and downstream passage measures are provided for at the projects in accordance with the KHDG agreement and the water quality certifications for the projects.

The petitioners' claims that significant eel mortality is occurring at the subject dams are not supported by any specific evidence. In my professional opinion, the petitioners have not demonstrated that adequate downstream eel passage is not presently being provided for at the Lockwood, Shawmut and Weston projects through existing measures. As discussed above, FPLE will implement the planned effectiveness studies in 2007 and 2008. If the studies demonstrate that eels are not passing the project(s) effectively via existing interim passage routes, then FPLE will, subsequent to consultation with the resource agencies, provide facilities and or operational modifications to provide cost-effective passage.

Therefore, the Board should deny the petitions.

Dated: 2-2-07

Robert C. Richter III

STATE OF MAINE
COUNTY OF Kennebec

Personally appeared before me the above-named Robert C. Richter III and made oath that the foregoing is true and accurate to the best of his knowledge and belief.

Dated: 2-2-07

Notary Public
My Commission Expires:

DONNA A. SEVERANCE
NOTARY PUBLIC, STATE OF MAINE
MY COMMISSION EXPIRES AUGUST 16, 2011

EXHIBIT FPLE-18

Weston Project Downstream Fish Passage Alternative Spillage Routes

EXHIBIT FPLE-19

Weston – South Channel Dam, Powerhouse, Log Sluice Gate, Stanchions

EXHIBIT FPLE-20

Weston – South Channel Dam, Log Sluice Gate Opening

EXHIBIT FPLE-21

Weston – South Channel Dam, Log Sluice Gate Discharge

EXHIBIT FPLE-22

Weston – North Channel Dam, Taintor Gates

EXHIBIT FPLE-23

Shawmut Project Downstream Fish Passage Alternative Spillage Routes

EXHIBIT FPLE-24

Shawmut – Spillway

EXHIBIT FPLE-25

Shawmut – Surface Gate Sluice

EXHIBIT FPLE-26

Shawmut – Taintor Gate (Deep Gate Located Below Taintor Gate)

EXHIBIT FPLE-27

Shawmut – Taintor Gate, Deep Gate and Surface Sluice Gate Discharges

EXHIBIT FPLE-28

Lockwood Project Downstream Fish Passage Alternative Spillage Routes

EXHIBIT FPLE-29

Lockwood – Spillway

EXHIBIT FPLE-30

Lockwood – Deep Gates, Turbine Intake Racks (Units 1-6), Dewatered

EXHIBIT FPLE-31

Lockwood – Surface Sluice Gate, Turbine Intake Racks (Unit 7), Attraction Water Intake for Upstream Fish Lift, Dewatered

EXHIBIT FPLE-32

Lockwood – Surface Sluice Gate Discharge

EXHIBIT FPLE-33

Lockwood – Fish Lift, Trap and Truck Facility