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January 26, 2011

Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, NE
Washington, DC 20426

Subject: Worumbo Project (FERC Project No. 3428)
January 25, 2011 Letter to National Marine Fisheries Service

Dear Ms. Bose:

On behalf of Miller Hydro Group (Miller) and pursuant to the Commission's July 14, 2010, letter to the National Marine Fisheries Service (NMFS) (designating Miller as the Commission's non-federal representative for informal consultation on Atlantic Salmon under Section 7 of the Endangered Species Act), we here submit a copy of our letter to NMFS dated January 25, 2011.

The attached letter to NMFS summarizes the informal ESA consultation and submits outlines of documents to be used in that consultation.

We provide this letter as a follow-up to the Commission's letter to Miller (and others) dated April 5, 2010, relating to upstream and downstream fish passage issues.

If there are any questions concerning this matter, please contact me at 207-239-3860.

Sincerely,

John Devine

John Devine P.E.
Project Manager

Attachment (1)

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January 25, 2011

Mr. Jeff Murphy
NOAA's National Marine Fisheries Service
Maine Field Station
17 Godfrey Drive Suite 1
Orono ME 04473

Subject: Worumbo Project – Androscoggin River – FERC No. 3428
Final Outline of Draft Biological Assessment and Feasibility Assessment
Of Interim Protection Measures
Project Description
Meeting Notes

Dear Jeff:

On behalf of Miller Hydro Group, we want to thank you for meeting with us on September 27, 2010, and subsequently reviewing and providing your comments on the content of a draft Biological Assessment (BA) which we received on November 30, 2010.

We have incorporated the review comments and will now proceed with the investigations contemplated in the Feasibility Assessment of Potential Interim Protection Measures, and following that, preparation of the draft BA. Please find the final outlines in Attachment 1 to this letter.

The first task under the draft BA and Feasibility Assessment is to prepare a detailed Project Description, which we have done and are providing to you for your use and information (see Attachment 2). We have also prepared a brief summary of the meeting that occurred on September 27, 2010 in your Orono offices. Please find this in Attachment 3.

We continue to believe that we will be able to complete the draft BA in the third quarter of 2011. We look forward to working with you throughout this process. If you have an interest in visiting the Project, we would be happy to accommodate you. Please let me know.

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Thank you again for your attention to the Worumbo Project.

Regards,

John Devine

John J Devine P.E.
Project Manager

Attachments (3)

cc: M Isaacson, Miller Hydro Group
B Keith, Miller Hydro Group
N Skancke, GKRSE
F Seavey, USFWS
P Keliher, MDMR
S Hocking, FERC

ATTACHMENT 1

Final Outline of Draft Biological Assessment

And Feasibility Assessment of Interim Protection Measures

Proposed Outline

Draft Biological Assessment
Gulf of Maine Distinct Population Segment of Atlantic Salmon

I. Background

(a) Recent ESA Listings of Atlantic Salmon
(b) Merrymeeting Bay Salmon Habitat Recovery Unit (SHRU)
(c) Project Licensed by FERC (reference current terms & conditions)

II. Purpose and Description of Draft BA

(a) Review of Ongoing Operations for their Interactions with Listed Fish
(b) Assess the Potential for Measures and Interim Species Protection Plan (the Assessment of Potential Interim Protection Measures will be an Appendix of the Draft BA)

III. Project Description

(a) Project Facilities
(b) Project Operations
(c) Project Maintenance Activities
(d) Water Quality in the Project Area
(e) Prior Relevant Studies

IV. Atlantic Salmon Life History

(a) General Description of GOM DPS of Atlantic Salmon
(b) Recovery Plan Overview

V. Presence of Atlantic Salmon in the Project Area

(a) Androscoggin River
(b) Data on Presence of ESA-Listed Salmon at the Project

VI. Critical Habitat Designations

(a) Summarize NMFS Findings on Critical Habitat
(b) Potential for Critical Habitat at Project

VII. Potential Effects on GOM DPS

(a) Life Stage Assessments of Project Interactions (spawning, incubation, larval development, rearing, outmigration, return to spawn)
(b) Upstream Passage
(c) Downstream Passage
(d) Migration Corridor Delay
(e) Zone 8 Pool
(f) Reservoir Operations
(g) Maintenance Activities
(h) Instream Flows
(i) Predation
(j) Juvenile Habitat
(k) Adult Habitat
(l) Potential for Cumulative Effects

VIII. Determination of Effects

(a) Avoidance and Minimization of Effects
(b) Estimate of Incidental Take
(c) Proposed Measures and Monitoring
(d) Potential for Adverse Effects on Species or Critical Habitat

ATTACHMENT A: Feasibility Assessment of Potential Interim Protection Measures

ATTACHMENT A
FEASIBILITY ASSESSMENT OF POTENTIAL INTERIM PROTECTION MEASURES

I. Background and Purpose of Interim Protection Measures

II. Project Location and Overview of Operations

III. Recent and Current Protection and Enhancement Measures for Listed Salmon

- (a) Operating Procedures – Upstream Passage
- (b) Operating Procedures – Downstream Passage
- (c) Water Quality
- (d) Instream Flows
- (e) Zone 8 Pool
- (f) Other Recent Measures
- (g) Maintenance Activities
- (h) Ongoing Agency Consultation

IV. Investigation of Potential Additional Protection and Enhancement Measures

- (a) Literature Search of Field Measurements of Salmon Fry/Smolt/Kelt Survival at Similar Hydroelectric Units
- (b) Additional Debris Management Measures
- (c) Upstream Passage Measures
- (d) Downstream Passage Measures
- (e) Little River Habitat Improvements
- (f) Bird Predation
- (g) Predation by Resident Fish
- (h) Instream Flows

V. Proposed Interim Protection Measures and Monitoring

VI. Implementation Provisions

- a. Effective Date and Schedule
- b. Requirements and Funding
- c. Monitoring and Reporting
- d. Adaptive Management

ATTACHMENT 2

Project Description

Section III
Project Description

3.1 Project Facilities Description

The Worumbo Hydroelectric Project (Project) consists of a rock-filled timber crib spillway section, two concrete gravity dam sections, a gated spillway, a two-unit powerhouse, a non-overflow abutment, upstream and downstream fish passage facilities, and a flood wall connecting the powerhouse to the mill island. The Project is owned and operated by Miller Hydro Group, Incorporated (MHG). MHG acquired the Worumbo site from Miller Industries in 1985, and began construction on the Project in 1986. The Project went on-line in February 1989, with a nameplate capacity of approximately 18 MW. In 1999, MHG amended the FERC license and increased the Project gross head from 28.0 feet to 29.5 feet with the addition of mechanical and pneumatic flashboards. The increase in head increased the nameplate capacity rating to the current 19.4 MW capacity.

The Project is licensed by the Federal Energy Regulatory Commission (FERC) as project No. 3428-ME. The FERC license expires December 31, 2023. The Maine Board of Environmental Protection issued a Maine Water Quality Certificate to the Project in 1985. The Low Impact Hydropower Institute (LIHI) re-certified the Project on July 3, 2008 (Certificate #10). The LIHI certification expires in 2013. The Project is a Qualifying Facility under Section 210 of the Public Utilities Regulatory Policy Act of 1978. The Project has an interconnection agreement and a reservation on the local network with Central Maine Power Company (CMP). A single purpose 34.5 KV transmission line owned by CMP connects the Project to the CMP system at CMP's Lisbon Falls substation. The Project node is UN.TOPSHAM 115 MILR (487).

3.1.1 Project Location

The Project is located at the historic head of the Ten Mile Falls on the Androscoggin River at Lisbon Falls, Maine. At this location, the centerline of the Androscoggin River at the Project is the municipal boundary between the Towns of Lisbon Falls and Durham, Maine.

Daily river flow data is available on the following link for the USGS streamflow gage located near Auburn Maine:
http://waterdata.usgs.gov/me/nwis/dv/?site_no=01059000&referred_module=sw
MHG uses the following formula to estimate river flow at the Project site:

(Gage Flow) x (3,382/3,263) ^ 0.8 = (Gage Flow) x (1.029)
Where:
3,382 = Project Drainage Area (square miles)
3,263 = Gage drainage area (square miles)

Total turbine capacity of the Project is approximately 9,600 cubic feet per second (cfs). The daily flow exceeded the turbine hydraulic capacity approximately 16% of the time during the period of the historic record spanning from November, 1928 to the present.

3.1.2 Dam

The Worumbo Hydroelectric Project includes a series of overflow dam sections and a gated spillway section that extend across the Androscoggin River from the Durham river bank on the south side of the river, to a powerhouse on Mill Island in Lisbon Falls on the north side of the river. At the Durham river bank, the first dam section consists of a 350-foot long rock-filled timber crib spillway equipped with a pneumatic flashboard system. The first dam section joins the next dam section which is about 170 feet long and consists of a rock-filled timber crib with a reinforced downstream concrete face and a pneumatic flashboard system. The rock-filled timber crib joins a 150-foot long concrete dike across the exposed ledge outcrop at mid-river. Next is a 139-foot long concrete gravity section with a square crest profile and a mechanical hinged flashboard system. This is followed by a 94-foot long concrete gravity section with an ogee crest profile and a hinged flashboard system. The next section consists of a 92-foot long, gated spillway section that extends to the powerhouse.

The gated spillway contains four 23-feet high by 19.25-feet-wide vertical slide gates which are operated by an overhead gantry crane for flood control purposes. The 2-unit powerhouse is situated adjacent to the gated spillway section. The elevations for this Project are based on National Geodetic Vertical Datum of 1929 (NGVD 29).

3.1.3 Spillway

Spillway capacity is provided by the overflow spillway dam sections and gated spillway section. The overflow spillway is comprised of the dam sections extending from the Durham side of the Androscoggin River to the gated spillway section near the powerhouse. The top of the hinged flashboard systems and the pneumatic flashboard systems are at elevation 99.0 feet in the up/inflated position with the exception of the southern-most 350-foot long rock-filled timber crib spillway section which is at an elevation of 98.5 feet in the inflated position to provide by-pass flow. All hinged flashboards are designed to "fail" (hinge down) and pneumatic crest gates fully deflate at headpond elevation when the river flow causes the pond elevation to overtop the boards by two feet.

The spillway gates are operated during high flow events as appropriate.

The Project's 100-year flood of record occurred on March 20, 1936, with a maximum recorded discharge of 140,000 cfs.

3.1.4 Non-Overflow Water-Retaining Structures

Non-overflow water-retaining structures at the Project include the powerhouse/intake. The top of the powerhouse concrete is at elevation 110.0 feet and the non-overflow section has a top elevation of 108.0 feet.

3.1.5 Intakes

The concrete intake structure is integral with the powerhouse structure and contains two vertical slide gates operated by the same gantry crane that operates the spillway gates. The vertical slide gates are normally open and are only closed for equipment maintenance. A hydraulic trash rake is located on the intake deck.

3.1.6 Powerhouse

The powerhouse is a reinforced concrete structure constructed in 1989 and measures 105 feet wide by 150 feet long. The minimum concrete elevation of the powerhouse is 17.0 feet and the maximum elevation at the intake is 110.0 feet. In addition to the two steel vertical slide gates that service the intake, a separate set of steel vertical slide gates service the draft tubes of the powerhouse for maintenance purposes.

The Worumbo Project has two horizontal axis, low speed, 4-bladed bulb turbine generators manufactured by Neyrpic and Alsthom Jeumont. The turbine generators have a nameplate capacity of 9.7 MW each and a maximum hydraulic capacity of approximately 4,800 cfs each. The turbines are full Kaplans with a runner diameter of 4.25 meters and a low rotational speed of 120 revolutions per minute (rpm). In the fully open position to pass higher flows likely to occur during fish passage time, the clearance between the blade tips and the throat ring varies from less that 1/8th of an inch at the center to approximately 1 inch at the leading and trailing edges. "Best gate" for these units occurs at approximately 70% gate setting. There is very little evidence of cavitation damage to the blades and throat ring after 20 years (average of 148,354 hours based on both units thru 8/31/10 hours per unit) of operation.

3.1.7 Trashracks

The trashracks span the intake waterway opening from elevation 41.75 feet at the base to elevation 82.20 feet at the top. The bottom of the downstream fishway openings is located at an elevation of 93.00 feet. The trashrack opening is 5 inches clear. The rack opening on the downstream fishway entrances is 12 inches clear. The racks are maintained with a manually operated hydraulic rake.

3.1.8 Fish Passage Facilities

The project is equipped with upstream and downstream fish passage facilities that were designed and constructed in parallel with the project reconstruction in 1986-7. Several federal and state agencies were involved with the review and approval of the Project fishways prior to construction including United States Fish and Wildlife Service (USFWS), Maine Department of Marine Resources (DMR), Maine Inland Fisheries and Game or IFG (presently known as Maine Department of Inland Fisheries and Wildlife or IFW), the Maine Department of Environmental Protection (DEP), and NOAA National Marine Fisheries Service (NMFS). A representative from the Environmental Protection EPA attended one project meeting. The Maine Atlantic Salmon Commission was also involved in the review of the Worumbo fish passage facilities.

While these agencies all took part in aspects of the fish passage facility review for the Worumbo Project, the USFWS provided primary review and comment.

The fish design numbers for the Worumbo fish passage facilities were based on 85,000 shad and 1,000,000 herring.

3.1.8.1 Upstream Fishway Configuration

The upstream fish passage consists of a vertical lift system with the following components: 2 entry way gates, a connecting gallery, 4 Flygt attraction flow pumps, a moving crowder, a cable operated lift, a headwater canal, fish viewing and counting room, an electrically operated gate at the downstream end of the counting window, an attraction flow diversion pipe from the headwater canal to the crowder area, and a head pond trash rack. The hydraulic capacity of the Flygt pumps is 40 cfs each. The hydraulic capacity of the diversion pipe is 30 to 80 cfs, but is maintained at 35 cfs. The counting and viewing room also contain the air compressors and control system for the pneumatic flashboards and an air blower for de-icing the four flood gates.

3.1.8.2 Downstream Fishway Configuration

The downstream fish passage consists of the following components: 3 entry way gates with trash racks located at the surface of head pond 11.30 feet above the top of the turbine intakes, sectional gates to close individual entrances, a connecting gallery between the entrances, a 36 inch diameter downstream passage pipe, a plunge pool that measures 30 feet by 20 feet and is kept at a depth of 10.0 feet under normal operating conditions. The plunge pool is equipped with two sectional gates that may be manipulated to control the depth of water in the plunge pool. The project gantry crane is equipped with a special boom for servicing the downstream plunge pool.

3.2 Project Operations

3.2.1 Normal Turbine Operation

The project is licensed to operate between pond elevations of 97.0 and 98.5 feet. In actual practice the plant operates as run-of-river with the exception of power system emergencies when MHG is called upon by CMP or ISO-NE for maximum output or under maintenance exceptions. MHG maintains a pond elevation slightly above the crest of the flashboards on the Durham side of the river in order to provide the required the seasonally variable instream flow to the bypass reach, including the Zone 8 pool, which is calculated according to a weir formula (see attached schedule). Bypass flow is calculated as the sum of overtopping flow, crib dam leakage, and downstream fishway flow. Under normal operations the project PLC operates to maintain the preset pond level by opening and closing the turbine gates and blades. Under drawdown conditions where de-watering of the by-pass reach is not intended, the crest gates are lowered in order to maintain the by-pass flow. Dewatering of the by-pass is only for maintenance purposes and is subject to the approval of MDMR and MDIF&W.

MHG maintains a digital and analog (strip chart) record of head pond elevation to document compliance with by-pass flow requirements.

3.2.2 Fish Passage Facilities Operation

3.2.2.1 Upstream Fishway Operation

MHG opens the upstream fishway upon notice from Maine DMR that the upstream migratory fish run has begun at the Brunswick fishway. This notification normally takes place in the second half of May. The upstream fishway operates according to a fixed schedule during daylight hours until the end of the alewife run. During this phase of operation MHG personnel physically count the fish as well as recording each "dump" of the fishway bucket on videotape. After the alewife run counting is only by videotape.

3.2.2.2 Downstream Fishway Operation

The downstream fishway is normally opened on April 1, or as soon thereafter as flow and ice conditions permit. The downstream fishway is run continuously until December 31st or when the river starts freezing over unless maintenance conditions require a temporary outage. Currently the downstream fishway operates with the river side gate fully open and the two other gates fully closed at the direction of the U.S. Fish and Wildlife Service.

3.2.3 Fish Passage Facilities Maintenance

The general maintenance of the fish passage facilities is completed in the winter months. The attraction pumps are removed, tested and inspected. Repairs are made as needed and all 4 pumps have been replaced between 2006 and 2009. The pumps are stored in the powerhouse until they are reinstalled in March. The lift, hopper and other metal parts are inspected and replaced as needed. The lift motor is inspected and tested as are all the cables.

The downstream weirs have trash racks in front of the weirs and these trash racks can be plugged by large debris in high flows. This debris is cleared as soon as river conditions allow safe access. In most cases debris plugging only happens at high flow when there is spill over the spillway which accommodates downstream passage.

3.3 References

Andrews, P. 1995. *1995 Plan for Evaluation of Upstream Fish Passage at Worumbo Hydro Project, Androscoggin River, Maine.* Prepared for Miller Hydro Group, Lisbon Falls, Maine. February 1995.

HDR|DTA. 2010. *Preliminary Supporting Design Report, Worumbo Dam Rehabilitation, Worumbo Hydroelectric Project, FERC Project No. 3428.* Prepared for Miller Hydro Group, Lisbon Falls, Maine. October 2010.

Miller Hydro Group. 1998. *Application for Amendment of License, Worumbo Hydroelectric Project, FERC Project Number 3428-Maine.* May 1998.

Northrop, Devine & Tarbell, Inc., and Lakeside Engineering, Inc. 1995. *Report of Results of 1994 Study of the Efficiency of the Downstream Fishway at the Worumbo Project (FERC No. 3428) Androscoggin River, Maine.* Prepared for Miller Hydro Group, Lisbon Falls, Maine. March 1995.

ATTACHMENT 3

September 27, 2010 Meeting Notes

Meeting Notes

Location:	NMFS' Maine Field Office
Date:	September 27, 2010
Attendance:	Jeff Murphy, NMFS Mark Isaacson, MHG John Devine, HDR|DTA
Projects:	Worumbo Project (FERC No. 3428) / Pejepscot Project (FERC No. 4784)

On this day, Mark Isaacson and John Devine met with Jeff Murphy to informally discuss a potential path forward for Miller Hydro Group (MHG)'s Worumbo Project and Topsham Hydro Partners (THP)'s Pejepscot Project, both located on the Androscoggin River upstream of NextEra's Brunswick Project. John Devine was representing both Worumbo and Pejepscot projects.

Jeff brought Mark and John up to date with the general process for evaluating hydro project ESA compliance and mentioned that the plan to use the Section 7 consultation process was acceptable. He described that any needed Incidental Take permit would follow from a NMFS Biological Opinion (BiOp) which could follow from MHG's and THP's draft biological assessments. Jeff also brought Mark and John up to date on the Recovery Plan being drafted by the USFWS. He pointed out that the Recovery Plan will cover three units, but remain a single Plan document. The schedule is to have the Recovery Plan completed in the spring of 2011.

Mark and John described the two hydro projects very generally, confirming that both operated in a run-of-the-river mode. They also covered the normal process for upstream and downstream fish passage operations, including regular consultation with Maine Department of Marine Resources regarding operating dates for the fishways.

John Devine then provided a summary of a proposed approach to preparing an interim species protection plan. On Worumbo, studies done in relicensing were discussed, including Zone 8 pool studies. Jeff asked if salmon were considered; neither Mark nor John could recall and agreed to look into that. Jeff suggested that future fishway monitoring would be important and suggested expanding the proposed assessment of predation factors. Jeff advised that the Section 7 process needs quantifications, but can be based on available existing data and information with follow-up monitoring. Water quality data availability, especially DO and temperature was discussed. Jeff suggested a stepwise approach to the assessment of measures and the draft BA, continuing to consult as progress is made.

The overall schedule was discussed and it is expected that 2011 will be a busy year for both the Worumbo and Pejepscot ESA efforts. Jeff expressed an interest in a site visit after the Project Descriptions and the final outline of the draft BAs are issued.