



## MEMORANDUM

EUGENE WATER & ELECTRIC BOARD  
ELECTRIC DIVISION, GENERATION ENGINEERING

*Rely on us.*

**TO: Commissioners Farmer, Brown, Cassidy, Cunningham and Ernst**  
**FROM: Cheri Wilson, Associate Engineer**  
**Lisa McLaughlin, Staff Biologist**  
**DATE: December 14, 2009**  
**SUBJECT: Walterville Fish Return Channel Project Update**

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### ISSUE STATEMENT

This memorandum provides an update on the status of the Walterville Fish Return Channel. The agency consultation process for new construction to bring the fish entrance into agency criteria and improve the effectiveness of the return channel has reached the 60% milestone. Army Corp of Engineer (ACOE) permit application submission is scheduled for mid-December.

The purpose of this memorandum is informational only. No Board action is requested

### BACKGROUND

The fish return channel at the Walterville tailrace is intended to reduce project-related impacts to anadromous fish by providing return access to the McKenzie River below the Walterville Canal tailrace barrier. EWEB's obligations regarding the return channel are regulated by Article 419 of the FERC license for the project, which includes Agency oversight requirements included in the 2001 Biological Opinion.

Observations of salmon holding below the tailrace barrier have raised concerns over the effectiveness of the return channel in guiding fish back the river. Possible reasons for this include poor attraction water at the fish entrance and low velocity through the channel. In August 2008 EWEB retained the service of R2 Resource Consultants, Inc. (R2) to evaluate the existing conditions at the return channel, provide a biological and engineering opinion and present conceptual designs to improve the effectiveness of the channel.

In July 2009 EWEB staff contracted R2 to continue work on conceptual designs and begin the agency consultation process for the proposed work. As part of the new contract, R2 is also aiding staff with the permitting process, providing project construction oversight and documentation closeout. The conceptual design to improve the effectiveness of the channel was presented at the first agency consultation in September. These improvements include changing the configuration of the fish entrance and constructing channel constrictions whereby bringing the entrance into agency criteria. Consultation is a required process that ensures aquatic species are protected by following agency guidelines and criteria.

A radio tagging study to assess upstream migrating spring Chinook salmon delay is required by articles 417 and 418 of our FERC license. Due to concerns with fish injury and poor salmon returns in 2008 and 2009, the study was delayed by the regulatory agencies until the spring Chinook salmon run is forecast at a minimum of 69,000 Willamette River fish entering the Columbia River. The forecast for 2010 is expected to be below 69,000 and given the cyclical nature of salmon runs, biologists expect the run to continue to increase in the short term. It is highly likely that the forecast for 2011 will be above 69,000 fish and EWEB will be required to conduct the upstream passage study. Construction at the return channel must take place during the 2010 construction season if we're to accomplish the study goals of assessing Chinook delay through what will be the long term conditions at the site.

## **DISCUSSION**

### **September 2009 – Agency Consultation**

The first agency consultation took place in September at the Portland office of the National Marine Fisheries Service (NMFS). EWEB provided an historic overview of the return channel and an update of the most recent channel realignment and intake gate construction. EWEB also took this opportunity to point out the substantially increased flow through the channel due to these recent improvements. R2 Resource Consultants Inc. presented conceptual designs for the fish entrance which featured a four (4') wide entrance with an overflow weir. Although the fish entrance met NMFS criteria for Chinook passage, it did not meet the guidelines suggested by Oregon Department of Fish & Wildlife (ODFW) for the passage of resident species. It was requested that the next iteration of the design include passage for all species.

Channel velocities were discussed with the conclusion that in-channel modifications would be necessary for a minimum of the first 200-feet. Historically fish have been observed entering the return channel only to exit back to the tailrace because of lack of attraction flow in the channel itself. There was strong opinion from ODFW in favor of channel constriction stating they would increase localized flow velocities and would give migrating species a cue to keep moving through the channel.

### **October 2009 – Agency Consultation**

EWEB and R2 Resource Consultants Inc. presented the requested changes from the September meeting. Revisions to the fish entrance included a four (4') foot wide anadromous fish entrance, a seven (7') foot wide Obermeyer regulating weir and a two (2) step fish ladder with a one (1') foot wide submerged entrance for resident species. The revisions met all criteria and guidelines requested by the Agencies.

It was further agreed the Obermeyer weir configuration would be revised to further increase the chances of Chinook finding the return channel, as well as passing debris without obstructing fish passage. Additional information about Obermeyer weirs, including photos, is included as an attachment.

Evaluation of options for channel modifications resulted in agreement that approximately 200-feet of channel would be filled with channel constriction used on 150-foot centers thereafter. ODFW provided a conceptual design of the channel constrictions.

Other modifications to the area will include raising of the access road by approximately three (3') feet to prevent flooding and designing floodway relief from the pond to the return channel during high flow events. In addition, an overhead walkway will be added to the concrete entrance structure to provide access to the Obermeyer weir controls located on the north bank. The walkway will also aide O & M crew in accessing the structure should maintenance be necessary.

#### **November 2009 – Agency Consultation**

On November 13<sup>th</sup>, R2 presented the requested 60% design which incorporated changes from the October 13<sup>th</sup> meeting. These included: (1) filling the first 200-feet of channel with material and channel constriction placement; (2) a' chamfered' edge on the concrete fish entrances to allow for Lamprey passage; and (3) and stoplogs to aid in the dewatering process during maintenance.

The next meeting is scheduled for January 15<sup>th</sup>, 2010 where EWEB and R2 Resource Consultants will submit 90% design for the project.

#### **Next Steps**

The Army Corp of Engineers and the Department of State Lands Joint Permit Application is scheduled for submission in December. A letter in support of the design has been offered from the NMFS to accompany the permit application. The 60% design package will be concurrently submitted in late December to the FERC for approval; FERC approval is expected mid to late spring. Based upon the current status of the permitting efforts, it is expected that construction of the project will begin at the beginning of the in-water work period on July 1, 2010 and continue through the summer.

In mid-January the fourth agency consultation is scheduled where the project will reach the 90% design milestone. Construction documents and specifications are in process and will be finalized once the 90% design has been accepted. Upon issuance of the ACOE permit the Construction Bid Package will be issued for bids. Once a qualified contractor has been selected the Request for Contract Approval will be presented to the Board approximately 8 weeks thereafter.

#### **RECOMMENDATIONS**

This memo is provided for Board information only. No Board action is requested.

## ATTACHMENT

### **Obermeyer Hydro**

An Obermeyer regulating weir is a steel gate panel supported on the downstream side by inflatable air bladders, see Figures 1 & 2. The weir gate level responds to internal air pressure in the bladder, headwater level and the change in flow rate at a set point. By regulating the flow at a set point, such as the anadromous fish entrance at the return channel entrance, this would allow EWEB to maintain the NMFS guidelines for fish passage, see Figure 3. No mechanical motors are required for gate operation.

The weir level is synchronized by a control system with the set points selected by the user at the point of application. Each control system includes a controlled source of compressed air and a means for controlled venting of air from the air bladders. Each system includes an air compressor, receiver tank and control valves. A power supply will be required to operate the control system with solar power as a back-up option.

Gate panels are constructed of high strength steel plate with an epoxy coating or galvanized steel according to purchasers' preference. Panels are slightly curved to allow space for the deflated air bladder when the gate panels are fully lowered, with stiffening ribs running parallel to the direction of the flow. The ribs provide strength to the structure without obstructing flow.

Obermeyer Hydro has been in business manufacturing gates and weirs since 1988. Gates and weirs installed in the late 80's are known to be operating as design with the original air bladder in place.

Figure 1 Obermeyer Regulating Weir – Upstream View



Figure 2 Inflatable Air Bladders



Figure 3 Obermeyer Regulating Weir – Downstream View

