

Priest Rapids Coordinating Committee

**Statement of Agreement
Approving Modification of the Gatewell Dipping Schedule
For Wanapum Dam**

Submitted to the Priest Rapids Coordinating Committee: December 14, 2011

Approved by the Priest Rapids Coordinating Committee: January 13, 2012

Statement:

The PRCC agrees that the spring and summer schedule for gatewell dipping at Wanapum Dam can be modified from the current schedule of 7 days/week during the spring migration and 5 days/week during the summer migration to “no” gatewell dipping at Wanapum Dam over the course of the spring and summer juvenile salmonid outmigration, as long as the Wanapum Fish Bypass is in operation.

The gatewell dipping schedule at Priest Rapids Dam will remain at the current schedule of 7 days/week during the spring migration and 5 days/week during the summer migration. The current gatewell dipping schedule (as presented above) for Priest Rapids Dam will remain in effect until the Priest Rapids Bypass is completed and operational or the schedule is modified by the PRCC.

Background: Grant PUD is required to dip-net the gatewell slots at both Wanapum and Priest Rapids dams, seven days a week during the spring out-migration and five days a week during the summer out-migration season, for the purpose of removing “trapped” salmonid smolts from the gatewell slots. All fish removed from the gatewell slots are transported and released downstream of each dam. The gatewell dipping program has been on-going for approximately 29 years. The annual average number of smolts removed via gatewell dipping at Wanapum and Priest Rapids for 1982–1996 was approximately 124,000 and 176,000 smolts respectively (Final License Application 2005).

Gatewell dipping is a method by which a large butterfly-net is lowered into the emergency wheel-gate slot via a boom (crane) truck, lowered to the bottom of the slot and then the wings of the net are opened to capture fish as the net is raised from the gatewell slot. Fish are transported via a transport tank truck around the dam and released downstream to continue their out-migration. Unknown, however, is whether or not salmonid smolts which volitionally entered the vertical slots also volitionally exit the slots. To address this question, one of the objectives of the 2010 Gatewell Exclusion Screen and Escapement Study at both Wanapum and Priest Rapids dams was to test the hypothesis that fish which enter either the bulkhead or emergency wheel-gate slots also exit volitionally (Wright et al. 2010).

During the spring and early summer months of 2010, gatewell exclusion screens and gatewell escapement was monitored at Wanapum and Priest Rapids dams. The first objective, gatewell

exclusion screen testing, was to monitor a single screen installed at each project in a bulkhead slot of a turbine intake with a dual frequency identification sonar (DIDSON) camera.

The second objective, gatewell escapement, was tested with a series of acoustic tagged steelhead and sockeye that were released into a single bulkhead and wheel gate slot at each dam between May 8, 2010 and May 23, 2010. Residence times of fish released into the slots were recorded 24 hours a day.

At both dams, fish volitionally exited the gatewell slots. Sockeye exited more quickly than steelhead with median residence times of 0.2 d (4.5 hr.) and 1.7 d, respectively, at Wanapum Dam and 0.1 d (2.9 hr.) and 1.9 d, respectively, at Priest Rapids Dam. The majority of the study fish exited through the turbine intake associated with the release gatewell slot; however, some fish did move upstream into the forebay and were detected passing at other turbine units or a surface bypass route.

Based on study estimates of the percentage of the fish population that utilize turbine passage and the percentage of that sub-population that might find their way into a gatewell slot (2.6%), it is estimated that between 0.6% and 1.4% of the out-migrating salmonid population would be prevented from finding their way into a gatewell slot and experiencing some delay to their migration due to gatewell retention time.

A possible explanation for the current observed low percentage of the smolts in gatewell slots compared to previous gatewell dipping activities (1982-1996) could be the operation of the Wanapum Fish Bypass; in operation since 2008. Timko et al. (2010) reported that fish passage efficiency (FPE) for steelhead at 77% and 78% for sockeye. One would expect that these high FPE's would result in a reduction in the percentage of the migrating smolt population using the turbines as a dam passage route, thereby also reducing the number of smolts encountering the gatewell slots. This same reduction in turbine passage has also been observed at Priest Rapids Dam during the testing of the top-spill bulkhead (Curt Dotson, personnel communication).

An evaluation of the DIDSON camera data from the 2010 study, also indicates that that summer migrants (i.e. sub-yearlings) have less than half of the interactions with the gatewell exclusion screens as seen by spring out-migrants, suggesting that even a lower percentage of summer migrants find their way into the gatewell slots as do spring migrants (2.6% of the population).

Literature Cited:

Wright, C.D., L.S. Sullivan, R.R. O'Connor, M.A. Timko, S.E. Rizor, J.L. Hannity, C.A. Fitzgerald, M.L. Meager and J.D. Stephenson. 2010. Evaluation of Gatewell Exclusion Screens and Escapement at the Priest Rapids Hydroelectric Project in 2010.

Timko, M.A. and ten co-authors. 2010. Behavior and survival analysis of steelhead and sockeye through the Priest Rapids Hydroelectric Project in 2010. Prepared for Public Utility District No. 2 of Grant County.