

# Marine Harvest Canada - Big Tree Creek Hatchery (BTC)

## Cold Water Recirculating Facility

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### Project Scale:

Multi-stage facility including three 50 tonne smolt production cells.

### Where:

Campbell River, BC, Canada

### When:

Work at BTC began in 1999 and continued into 2002.

### Project Description:

With a combined rearing volume of more than 2000 m<sup>3</sup>, total recirculated flow of more than 2300 m<sup>3</sup>/hr (10,000 gpm), and recirculation on all life stages from incubation to smolt production, Big Tree Creek Hatchery is one of the most extensive examples of the application of recirculation technology in North America. Smolt cells 1, 2, and 3 have a combined capacity in excess of 150 tonnes per year.



### Services Provided:

Turn-key facility design, equipment supply, and construction management services. At design completion, PR Aqua prepared operating manuals and provided training to operations staff. In the years since operation began, PR Aqua has provided water quality troubleshooting services and advice when required in support of each project.

### Project Features:

The development of Big Tree Creek Hatchery occurred over multiple years and consisted of multiple independent projects to meet with an evolving production strategy. PR Aqua participated in each phase of the development as the lead design consultant, equipment supplier, and contractor to provide a turn-key solution for Marine Harvest Canada.

The facilities constructed at Big Tree Creek include both heated and chilled recirculating incubation systems, two fry-rearing and three smolt-rearing facilities with a combined total recirculation flow of more than 2300 m<sup>3</sup>/hr (10,000 gpm).

All incubation systems including sand filtration for particulate removal, UV sterilization for pathogen control, and either heating or chilling as required for control of egg development rates.

All fry and smolt rearing systems share a common treatment strategy similar to other facilities built by PR Aqua. At the heart of each filtration system are fluidized bed biofilters used to prevent the accumulation of ammonia. UV sterilization is used in combination with full-flow ozonation to provide protection from pathogens and superior water quality.

### **Challenges and Solutions:**

The most challenging aspect of this job was to make the switch from flow through rearing systems using contaminated salmon bearing river water to the new re-circulating systems without interruption of production. This was accomplished through very careful timing of construction of key elements of the overall hatchery system. The critical aspects of this switch-over involved drilling a new well and fabricating a comprehensive manifold allowing water to be directed from all well sources to any rearing cell on site before construction of the new rearing facility was started.

### **Results:**

The new re-circulation systems at Big Tree Creek completely eliminated the ongoing disease problems and allowed for the manipulation of growth rates, enabling Marine Harvest to deliver their product to the ocean at multiple intervals, when they wanted, at the size they wanted. This system has proven to be very reliable and flexible, keeping pace with many, market driven changes in species selection and growth strategies.