

Summary on Closed-Containment Aquaculture Activities in BC

December 2010

Background:

- In 2008 the Canadian Science Advisory Secretariat (CSAS) began a review of closed containment aquaculture.
- The CSAS review concluded that there were no closed-containment systems producing Atlantic salmon at commercial scales and recommended that Fisheries and Oceans Canada (DFO) undertake a financial feasibility study.
- In 2008, the Coastal Alliance for Aquaculture Reform (CAAR), the David Suzuki Foundation and the Georgia Strait Alliance jointly released a report titled “*Global Assessment of Closed System Aquaculture*”, advocating strong support for closed containment aquaculture.
- The Pacific Salmon Forum (PSF) released its final report in January 2009, which called for a detailed assessment of containment technology prior to any substantive investment of public funds in commercial trials.
- In May 2010, The Save Our Salmon Marine Conservation Council (SOS MCC) released their report “*Technologies for Viable Salmon Aquaculture - An Examination of Land-Based Closed Containment Aquaculture*” concluding that there were no technological or economic barriers to closed containment aquaculture for the production of farmed salmon.
- In November 2010, DFO released its final report on the financial feasibility of closed containment aquaculture. A primary recommendation from the report was that a scalable demonstration project, capable of producing salmon at commercial levels, be carried out to test the technical and financial feasibility of closed containment under real world conditions.
- First Nations were represented on the CSAS closed-containment review Steering Committee. Several First Nations are currently engaged in, or are developing closed containment pilot projects, including the Namgis First Nation, The Toquaht First Nation and the Aboriginal Aquaculture Association.

Discussion:

- The development of closed containment aquaculture as an alternative to conventional net pens aligns with the Ministry’s goals for the development of an aquaculture sector that is economically, environmentally and socially sustainable.
- Accordingly, the Ministry has provided financial and in-kind support for closed containment projects over the past few years, notable projects include: Future Sea (to develop marine-based bag systems); Agri-Marine/Cedar (pump ashore system); Marine Harvest Salt Spring Pilot (evaluation of Future Sea bags under the Provincial Pilot Project Technology Initiative); and the CSAS review. More recently, through the Investment Agriculture Foundation of BC, financial support was provided for the SOS MCC report on technical and financial feasibility of land-based closed containment systems and Phase I of the Namgis First Nations Land-Based Atlantic Salmon Re-circulating Aquaculture System Pilot Project.
- The Province also routinely reviews proposals forwarded directly from proponents or indirectly for comment from funding agencies. These proposals seek direct financial support from the Province and/or approval-in-principle to support funding applications. Funding agencies involved include DFO, Western Economic Diversification, the Innovative Clean Energy Fund, Tides Canada (and their recently created Aquaculture Innovation Fund), and private investors.
- As noted in DFO’s economic feasibility study, the major barrier to the development of land-based aquaculture systems is cost. Typically, the capital costs for a scalable pilot project range from \$2 to \$10 million, with operating costs estimated at \$1-\$2 million/year. At production volumes equivalent to an average net pen (2,500 MT/year), the capital costs estimates range from \$23 million (DFO) to \$31 million (Freshwater Institute, West Virginia). Given the number of projects currently being considered and the high costs of the projects, successful set up, implementation and evaluation requires broad support and participation from multiple funding agencies, partners and stakeholders.

- To date the Ministry's approach to these projects has been to provide expert advice and, on a case-by-case basis, fund component technology that is leveraged to obtain access to larger sources of funding. More recently, the Province has limited support to feasibility assessment-type projects and reports.
- While there are several research and development programs for the development of closed containment technology, capacity is limited. The recently created Aquaculture Innovation Fund (Tides Canada) currently holds about \$5.0 million in funds specifically developed for supporting research into closed containment finfish aquaculture. While this fund is the largest source of financial capital available for closed containment research and development, it is undercapitalised given the infrastructure costs associated with closed containment.