A1. Addendum Rationale

During the Columbia River WUP process, the Consultative Committee expressed concern regarding the effect that operation of Revelstoke Dam and Arrow Lakes Reservoir may be having on the quality and quantity of white sturgeon spawning habitat in the mid Columbia River. Discharge from the dam can vary over a 24-hour period from minor leakage, when no water is passing through the generating units, to more than 1700 m$^3$/s when all units are operating at full capacity. Hydraulic conditions in the riverine section below Revelstoke Dam are therefore highly variable and complex. Adding to this complexity is a backwatering effect caused by Arrow Lakes Reservoir. This flooding effect is greatest from June to August when the reservoir is near or at full pool level, extending over 40 km from Shelter Bay to just downstream of the Revelstoke Dam. Sturgeon spawning habitat can, therefore, be affected by both discharge from the dam and reservoir water surface elevation. Characterizing the suitability of this habitat for sturgeon spawning will require exploring the effects of both these operational factors on hydraulic conditions within the river.

As specified in Schedule F: 1.b of the Columbia River WUP Implementation Order, BC Hydro submitted the Terms of Reference (ToR) for the Mid Columbia River White Sturgeon Spawning Habitat Assessment (CLBMON 20). The scope of the program is limited to empirical measurement of hydraulics and observations of substrate conditions over two years (2009 and 2011) to allow collection of data over a range of dam discharges and reservoir elevations, which would include approximate minimum and maximum discharge levels, as well as potential spawning flow test levels (including the modeled optimum minimum discharge of 850 m$^3$/s from Revelstoke Dam suggested to achieve suitable spawning habitat for sturgeon in the mid Columbia River).

During the consultative process for the Revelstoke Unit 5 Project, the Core Committee recommended that further assessment be undertaken to determine the effect of increased discharge resulting from 5-unit operations on spawning, incubation and early rearing habitat of sturgeon downstream of Revelstoke Dam. Specifically, this monitoring program (CLBMON-54) is designed to assess how Revelstoke Dam (including the addition of unit 5) and Arrow Lakes Reservoir operations affect hydraulic conditions in incubation and suspected early rearing habitat area(s), and how these hydraulic conditions relate to habitat suitability (quality and quantity) for white sturgeon. The study expands on CLBMON 20 to include incubation and early rearing hiding habitat conditions downstream of the spawning area, and adds the higher maximum discharge of 2124 m$^3$/s to assess the effects of REV5 operations on habitat conditions. As such, the study design (timing and sampling locations) will rely on the same information directing decisions for CLBMON-20. The study is scheduled to be conducted in one year pre-Rev 5 (2010) and one year post Rev-5 (2012).

In order to facilitate comparison for spawning, incubation and early rearing (free embryo hiding) together, CLBMON 20 and 54 need to be conducted concurrently. Further, to help assess the effect of REV5 operations, it seems reasonable to operate under the higher maximum discharge for at least a year to allow assessment of any effects the altered flow regime may have on channel topography, related flow parameters, and substrate conditions. The implementation of these projects are therefore proposed for 2010 (pre-REV5) and 2012 (post-REV5).
A1.2 Schedule
CLBMON #20 will be rescheduled to align with CLBMON #54, with pre-REV5 work undertaken in 2010 and post-REV5 work undertaken in 2012.

A1.3 Budget
The approved budget for CLBMON 20 is $378,439. The increase in project costs as compared to the original CWR approved budget is due to the inflationary factor of delaying the study from 2009/2001 to 2010/2012. No other changes have been made to the budget.