

Cowichan Watershed Board

Summer Flow Target

Draft Target Backgrounder for Discussion by CWB

Target Focus

Ensure that Cowichan River summer flows are maintained at levels that support the needs of people and fish.

Background

Goal 2 of the Cowichan Basin Water Management Plan is to “Manage water supply to meet human needs and minimize impact of low water levels”. The Plan recommended achieving:

- River flows that do not fall below 7cms during the year, increasing to 8.5 cms by 2031 to compensate for climate change, population growth and water demand; and,
- Annual lake storage that satisfies summer base flow requirements in 19 years of 20 years from 2007 and 2031.

Those recommendations were established because it is well documented that when summer flows falls below 7cms it results in negative effects on:

- Rearing habitat for salmonid species;
- Upstream migration of adult Chinook salmon to traditional spawning areas;
- Dilution of treated sewage effluent to maintain health standards;
- Enjoyable recreational experiences – tubing, kayaking, swimming, angling; and,
- Community water supplies (groundwater recharge; Crofton’s domestic supply).

Achieving this target also contributes to the Goal of ensuring “Sufficient water is available to sustain aquatic and riparian ecosystems throughout the year.”

Target

Cowichan River summer flow maintained at 7cms (cubic meters per second) or higher.

Rationale

Catalyst Paper Corp. currently holds a provincial water license to withdraw up to 89.3 m³/year of water from the Cowichan River in support of its Crofton Pulp Mill operation.

A key condition on the Catalyst license is the requirement to provide a minimum flow of 7cms (or 250 cubic feet/sec) in the Cowichan River below the Cowichan Lake weir (when in operation), and that a flow of 2.8 cms be maintained in the lower river below their point of diversion near Duncan.

The target flows were originally set by the Comptroller of Water Rights on advice from the Federal Fisheries Department in the mid 1950's. They were further substantiated after a series of technical reviews and field studies in the 1980's led by the Regional Water Manager, Dr. Bill Hollingshead (Ministry of Environment and Parks 1986; Wightman and Ptolemy 1989; Burt and Wightman 1997).

In addition to fish production benefits, the 7cms minimum summer flow is critically important for waste water dilution from two sewage treatment plants (JUB in Duncan and Town of Lake Cowichan), and in response to a dramatic increase in summer recreational use of the entire river corridor over the last 20 years.

Due to water use efficiencies and changes to mill production facilities through the years, Catalyst has reduced its average water withdrawals from the Cowichan to approximately 53.8M m³/year, or 60% of the total currently licensed. Despite these positive developments, consistently providing 7cms to the river below the weir from early July through October has become increasingly difficult in recent years (Fig. 1). This is mainly due to changes to basin inflows (Chapman 2011).

Allan Chapman, P.Geo. and former Head of BC's River Forecast Centre has reported that natural basin inflows (June – September) have decreased by 35% since the late 1950's (Fig. 2). He further stated, "The data suggest that runoff into Cowichan Lake during summer has become much more variable since about 1995, with five out the seven driest summers of record occurring since 1995, including 2003 and 2006, which were the 2nd and 3rd driest summers of record, respectively."

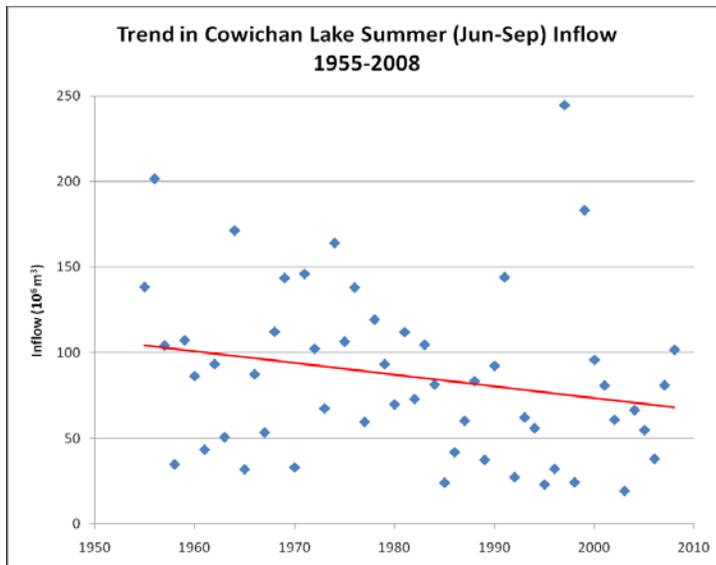


Figure 2. The trend in Cowichan Lake summer inflows (June-September), 1955-2008 (Chapman 2011).

Consequently, a measurable and critical target for the Cowichan Watershed Board's consideration should be reliable provision of the 7cms conservation flow below the Catalyst weir in Lake Cowichan from approximately July 9 (when the full supply level of storage is notionally achieved) to when the weir goes off control, typically in late October due to the onset of heavy fall precipitation.

It is noteworthy that real-time lake level and flow monitoring infrastructure has already been funded and in place courtesy of Catalyst Paper Corp.

(http://www.wateroffice.ec.gc.ca/text_search/search_e.html).

Action Plan to Achieve Target

The following actions are directed at achieving the target in a manner consistent with the Watershed Boards commitment to complete foundational work and due diligence.

1. Maintain the existing 3 Water Survey of Canada stations and calibrate each year to summer base flows
2. Re-install snow pillow indicator at Heather Mountain
3. Ensure weir operator has ability to automate with current information to make real-time decisions
4. Establish an expert panel to discuss:
 - a. instrumentation needed to provide more certainty to weir operators
 - b. review long-term achievability of 7cms, including impacts of climate change on base summer flows

- c. assess connectivity of groundwater to maintenance of base flows in Cowichan River
 - d. review flow requirements below intake to determine feasibility of maintaining biological, fisheries and human health requirements.
5. Continue to evaluate all options for securing long-term certainty in providing acceptable conservation flows in the Cowichan River such as:
 - a. Rule band vs. rule curve
 - b. A communication plan for impacted properties upstream and downstream of the weir
 - c. Assessing the benefits and impacts of increased storage on Lake Cowichan

Resource Requirements

It is anticipated that Water Survey of Canada survey stations will continue to be operated and the database maintained. Some charge-backs apply e.g. Catalyst contributes \$30,000 annually in support of 2 stations.

The Watershed Board has sought \$10,000 to partner with Living Rivers on the Heather Mtn. Operating funding has yet to be secured but since the benefits are local a local funding source would seem to be appropriate.

It is anticipated that Catalyst will provide funding to refine weir operations.

The TAC will form the nucleus of the expert panel with other participants brought in on an as needed basis. Portions of the current \$150,000 Gas Tax funds and the \$370,000 Gas Tax Request are intended to support initiatives involving Actions 4 and 5 above.

The TAC also hopes to receive approval to apply for funding to assess fisheries flow needs below Catalyst's intake.

Additional funds may be required depending on findings of studies.