



Cowichan Watershed Board

Cowichan Tribes Chief and Council Chambers, Duncan

March 8, 2012



Factors Supporting a Summer Flow Target for the Cowichan River

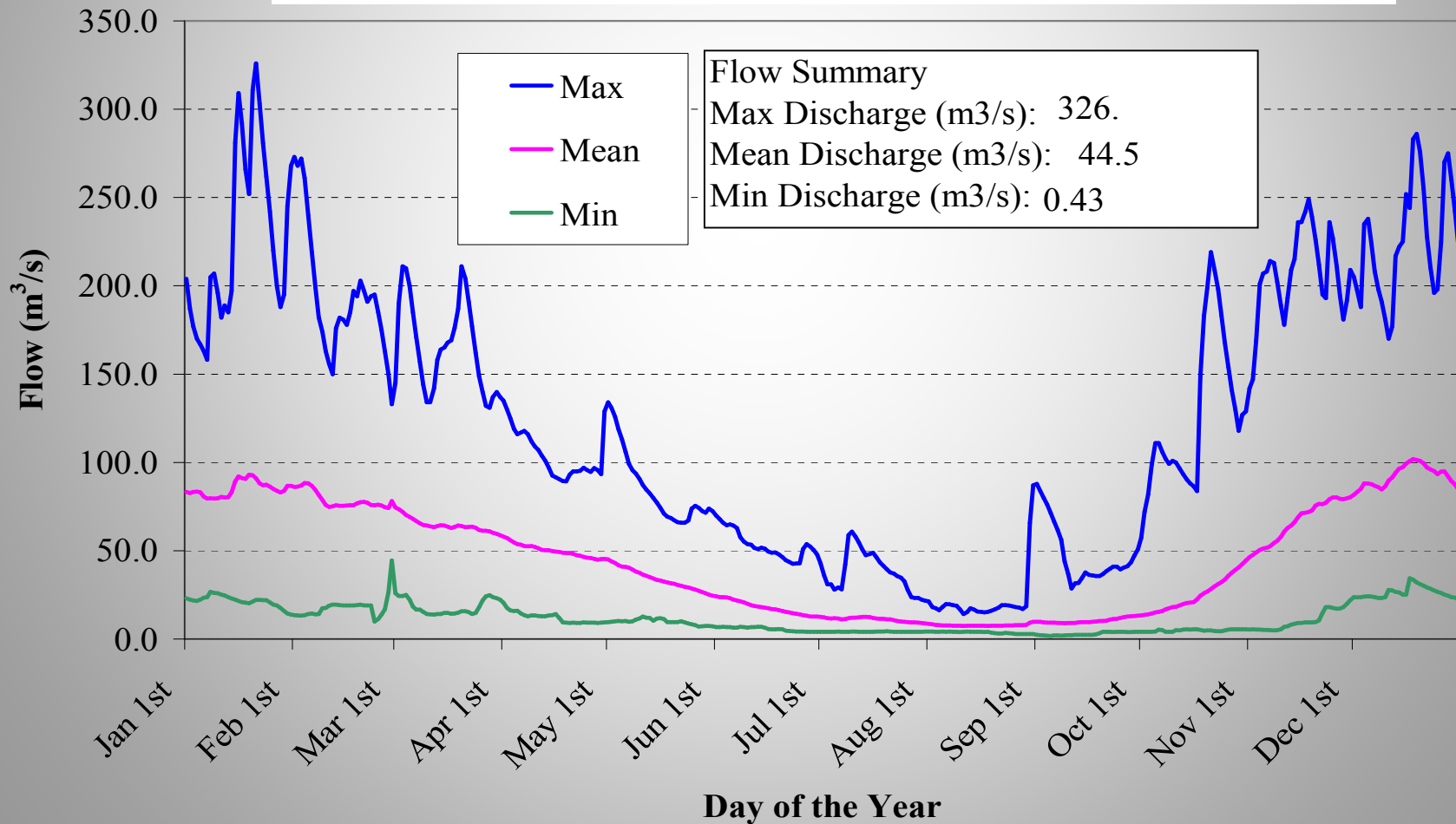


Factors Supporting a Summer Flow Target for the Cowichan River

- ***Aquatic Ecological Health***
- ***Flow Connectivity with Aquifers & Riparian Habitats***
- ***Historical & Cultural Value to Cowichan Tribes***
- ***Industrial & Domestic Water Licences***
- ***Waste Dilution from 2 STP's (water quality maintenance)***
- ***Highest Seasonal Recreational Use***

Cowichan River Annual Flow Variation

**80% of flow occurs from
Sept to March**



What the water supply pattern actually looks like...

Cowichan Skutz Falls 2006



***November
(200cms+)***



***August
(4-7cms)***

Catalyst Paper Corp. – Crofton Mill Water Licence

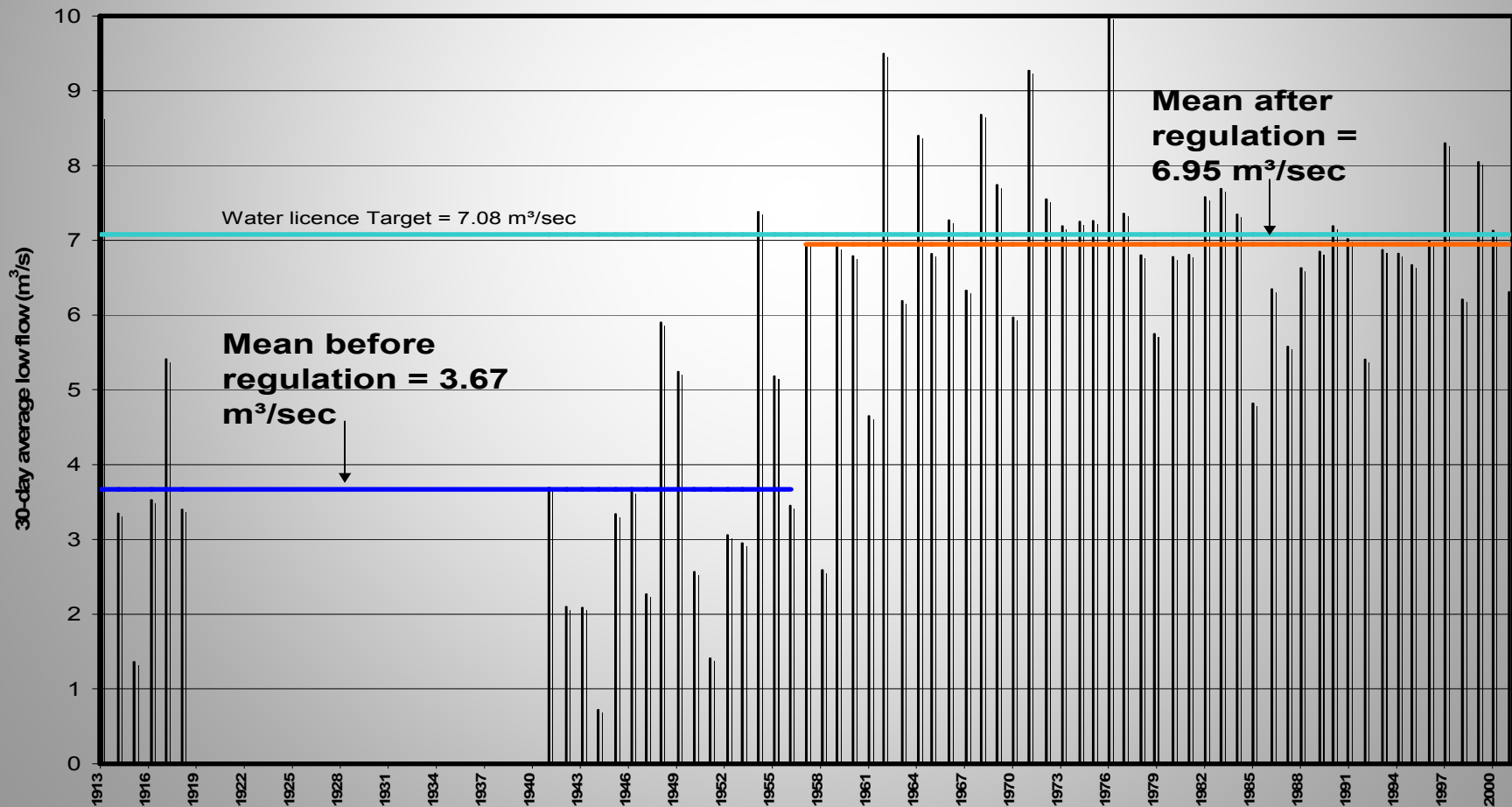
- ***Weir constructed in 1956 at outlet of Cowichan Lake***
- ***Weir supports licenced seasonal water storage of 61.3M cubic meters/year (~1m at fsl)***
- ***Catalyst licenced to withdraw 89.3M m³/year but now uses ~56.5M m³/year (37% reduction)***
- ***Original licence required a minimum conservation flow of 7cms below the weir when in operation***
- ***Also required a minimum flow of 2.8cms below the pump house during this same period***



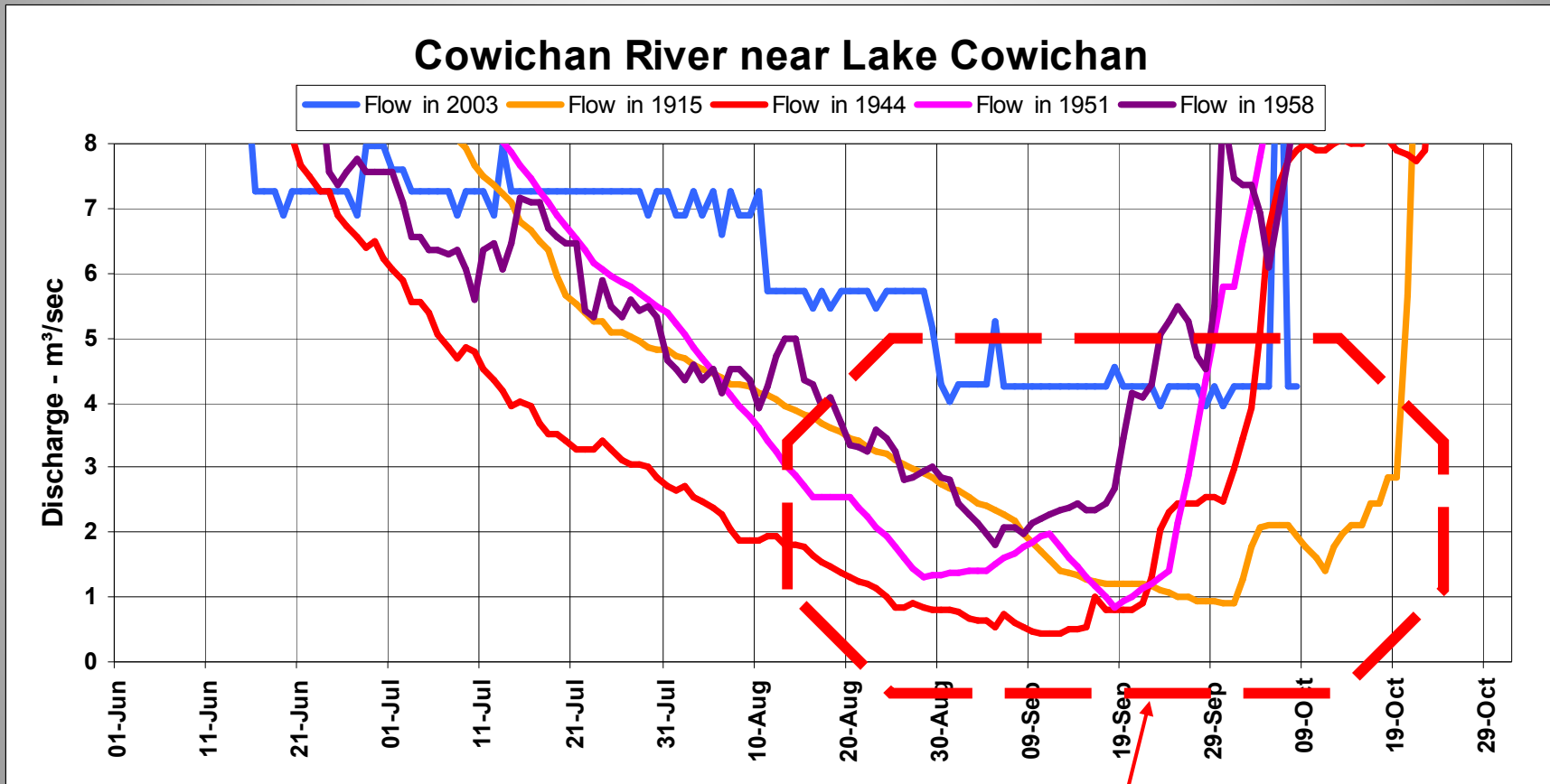
What good does the weir do?

Mean summer river flows (below the lake) have nearly doubled since 1957!

08HA002 Cowichan River at Lake Cowichan



What good does the weir do for fish?
Extreme low summer flows (~2-3 cms) have been rare since 1958

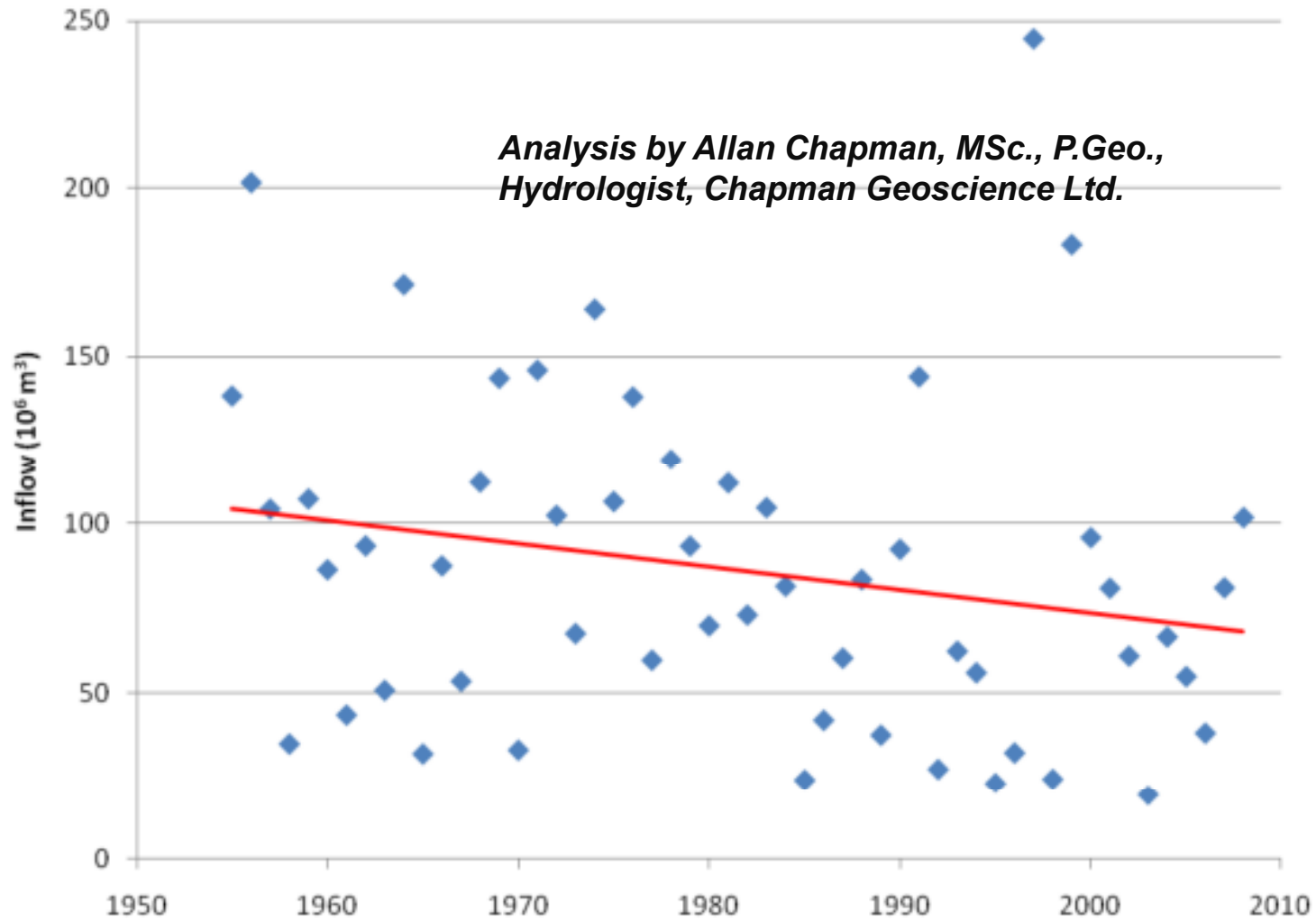


Extreme low flow period

How successful have we been in meeting the 7cms summer flow target?

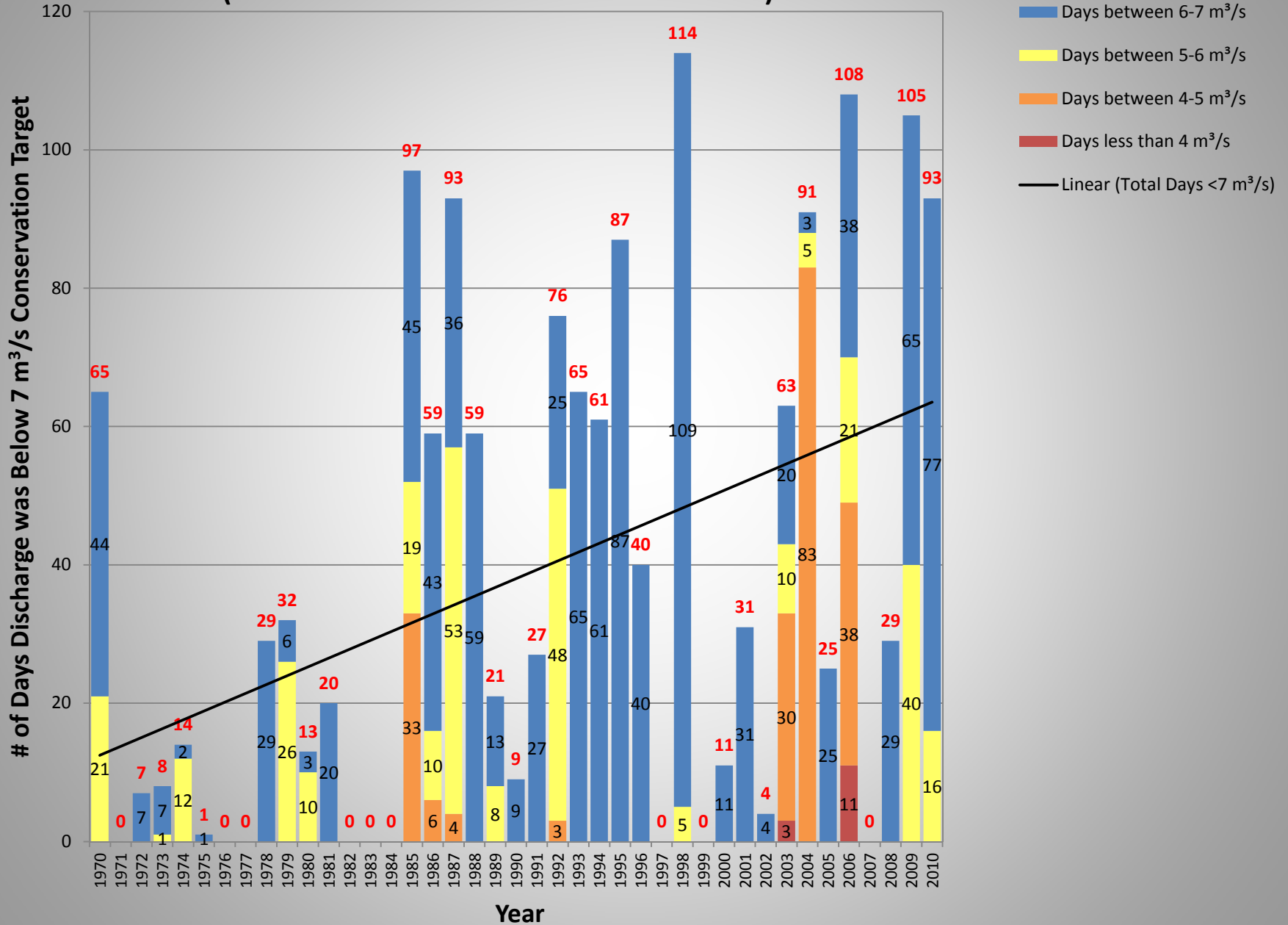


Trend in Cowichan Lake Summer (Jun-Sep) Inflow 1955-2008

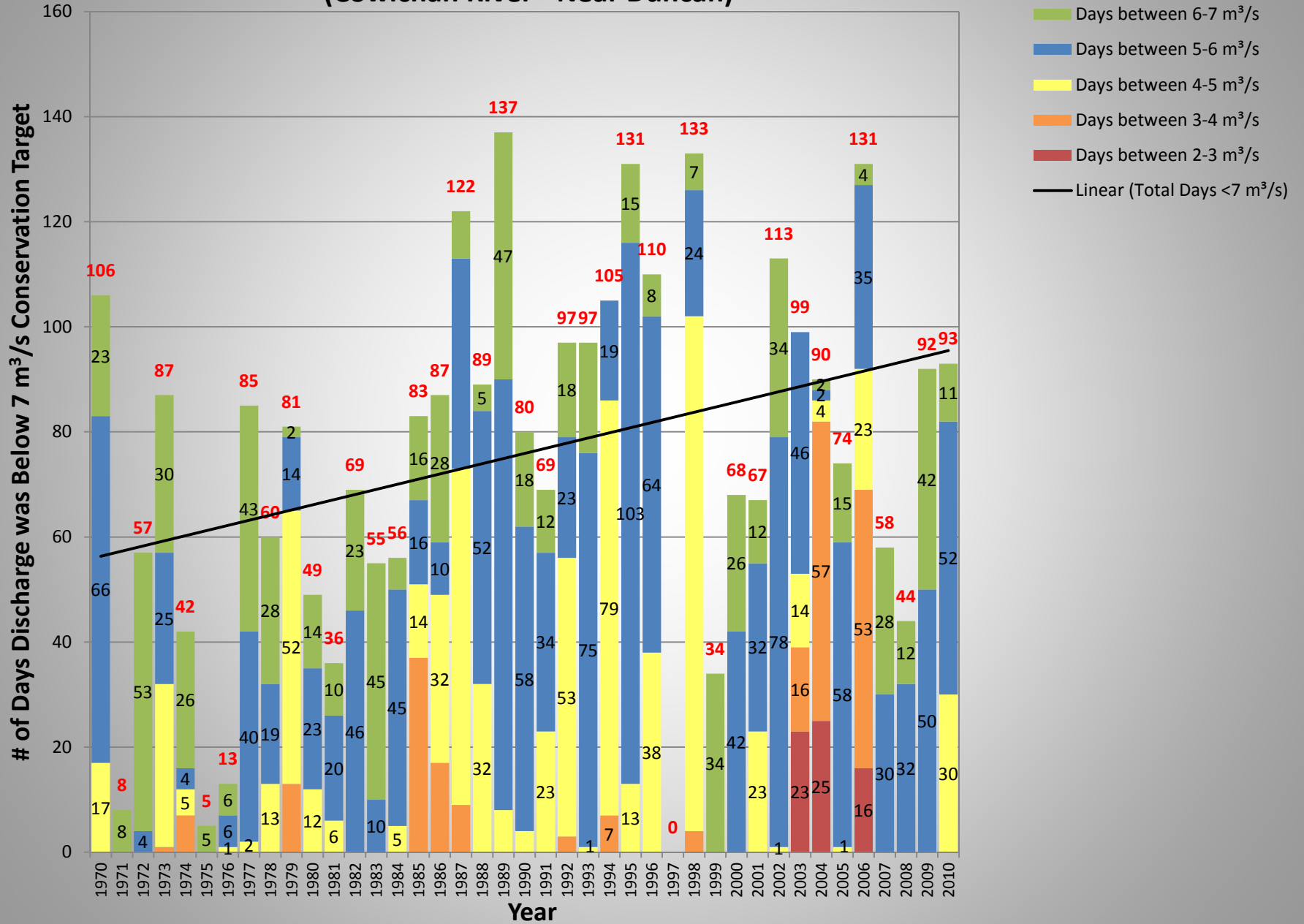


During the late 1950's, summer inflow averaged about 104 million cubic meters. By 2008, it had dropped to an average of 68 million cubic meters, an annual reduction of 35 percent.

Cowichan River Historical Low Flows at WSC Station 08HA002 (Greendale Trestle - Below Lake Cowichan)

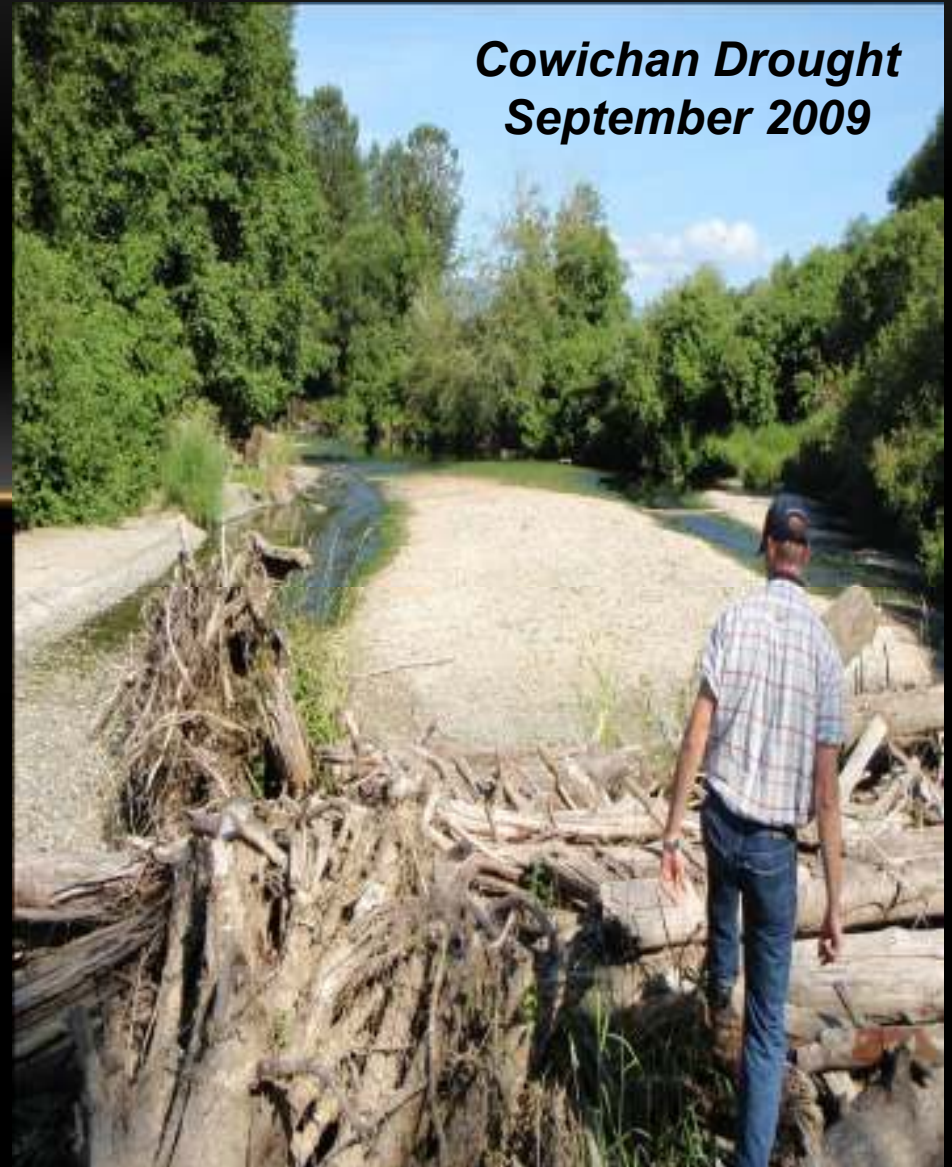


Cowichan River Historical Low Flows at WSC Station 08HA011 (Cowichan River - Near Duncan)



EVIDENCE OF CLIMATE CHANGE IS ALREADY HERE!

- *WSC data suggest that runoff into Cowichan Lake during summer has become much more variable , especially since 1995.*
- *5 of 7 driest summers of record have occurred since 1995, including 2003 and 2006, which were the 2nd and 3rd driest summers of record, respectively.*



Will a summer base flow of 7cms continue to meet the river's long-term needs?



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- ***1987 study by Wightman and Ptolemy (MoE, Fisheries Program) confirmed the value of 7cms to juvenile steelhead and resident RBT habitat in upper Cowichan River (Greendale to Skutz Falls)***

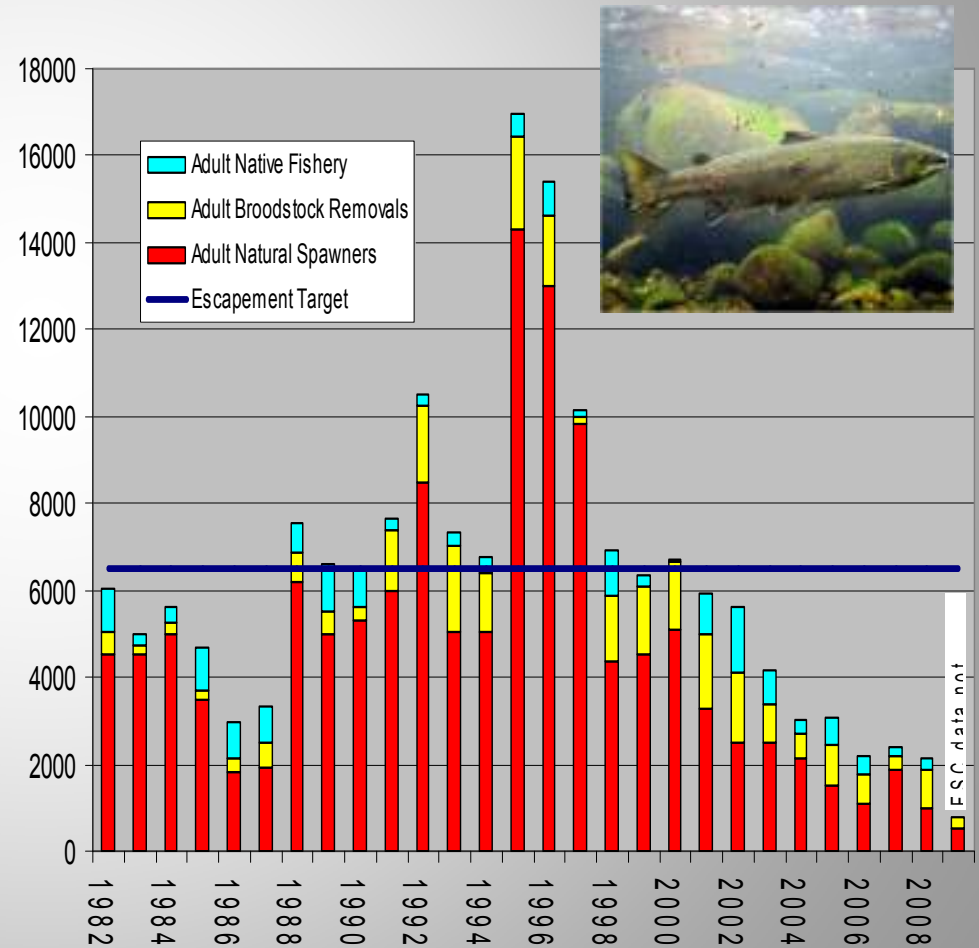


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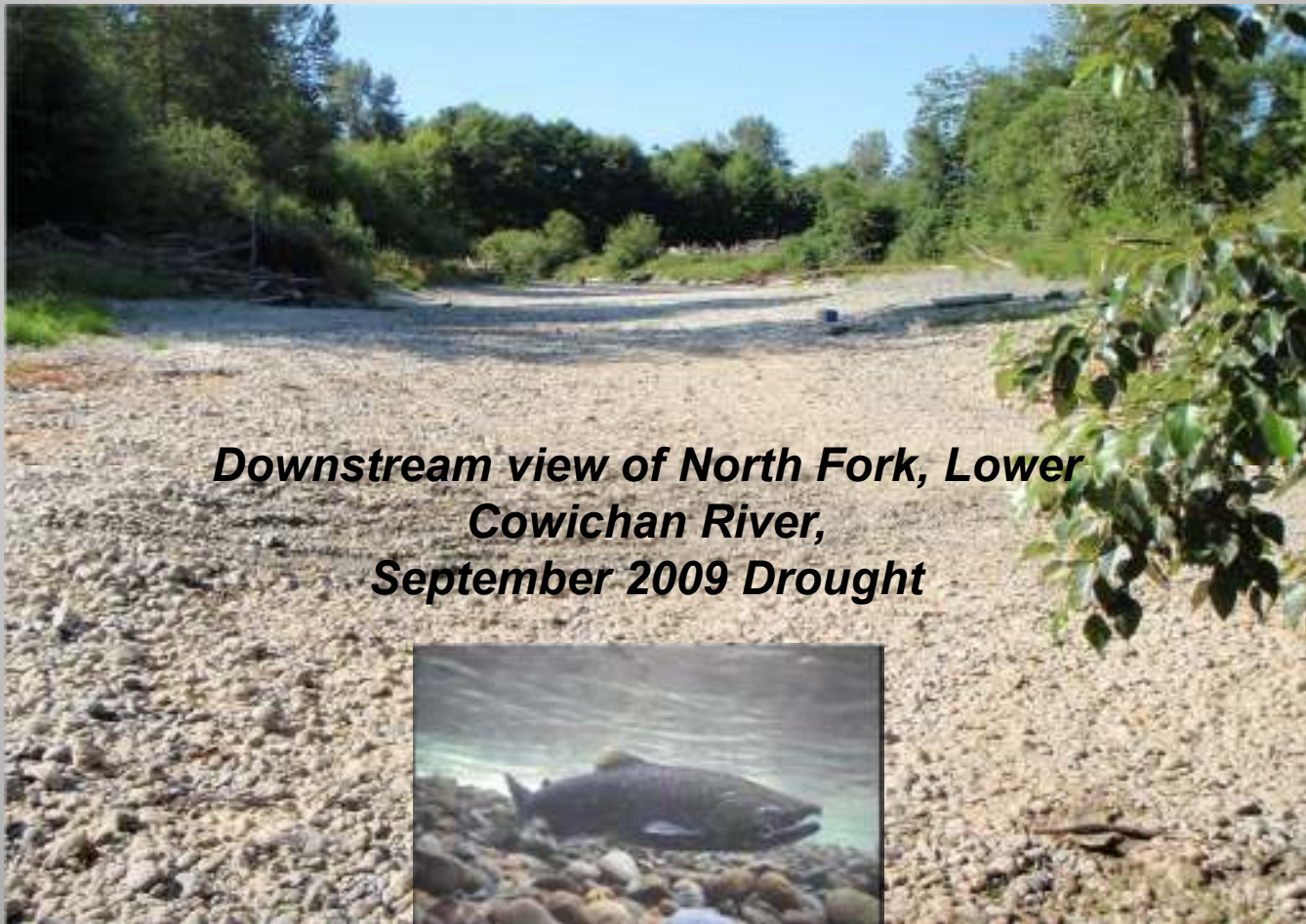
Cowichan Chinook Recovery Plan under development (Luedke 2011)

- *Plan recognizes the importance of improved long-term water management to stock rebuilding objectives*
- *Migration pulse flows for spawners crucial during droughts*
- *Side-channel or lower floodplain connectivity in early spring may be vital to fry growth/survival*

Cowichan Adult Chinook Freshwater Escapement



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***Downstream view of North Fork, Lower
Cowichan River,
September 2009 Drought***



Will a summer base flow of 7cms continue to meet the river's long-term needs?



Waste dilution targets – lower Cowichan River?

Overview of Target Work Plan

- 1. Maintain existing 2 WSC hydrometric stations and calibrate each year to summer base flow conditions;***
- 2. Re-install a snow pillow at Heather Mountain (to replace reliance on Jump Creek snow pillow);***
- 3. Ensure weir operator has ability to access & integrate real-time data to improve water mgmt. decisions;***
- 4. Hold an Experts Panel Workshop; and***
- 5. Evaluate all options for ensuring long-term certainty in providing conservation flows in the Cowichan River***

Actions

- **Conduct a 2012 study of Cowichan flows required to maintain fish habitat under current supply/demand conditions, d/s of the Catalyst pump house (CHERI and CRAIG – presently unfunded);**
- **Complete LIDAR evaluation of lake shore effects from a proposed increase in weir storage– (RODGER – prelim. assessment by mid-march);**
- **Identify lake levels if the weir was decommissioned or not operated (RODGER – working with nhc’s Graham Hill, P.Eng. – prototype expected by mid – late March);**
- **Conduct a lake shore erosion study (Eric Morris, P.Eng., KWL Assoc.) – funded by BCCF in 2010 & completed in 2011; and**
- **Prepare a down-scaled Regional Climate Model for the Cowichan Basin; draft completed by KWL Assoc. in 2011 (RODGER & CRAIG)**

Recommendations for the Board's Consideration

- ***Adopt interim summer flow target of 7cms as measured at WSC Sta. 08HA002 (Greendale)***
- ***Continue to pursue adoption of Rule Band management of seasonal storage on Cowichan Lake (“drought insurance”)***
- ***Advise TAC to investigate impacts of low flows d/s of Catalyst pump house in terms of ecological and water user needs***