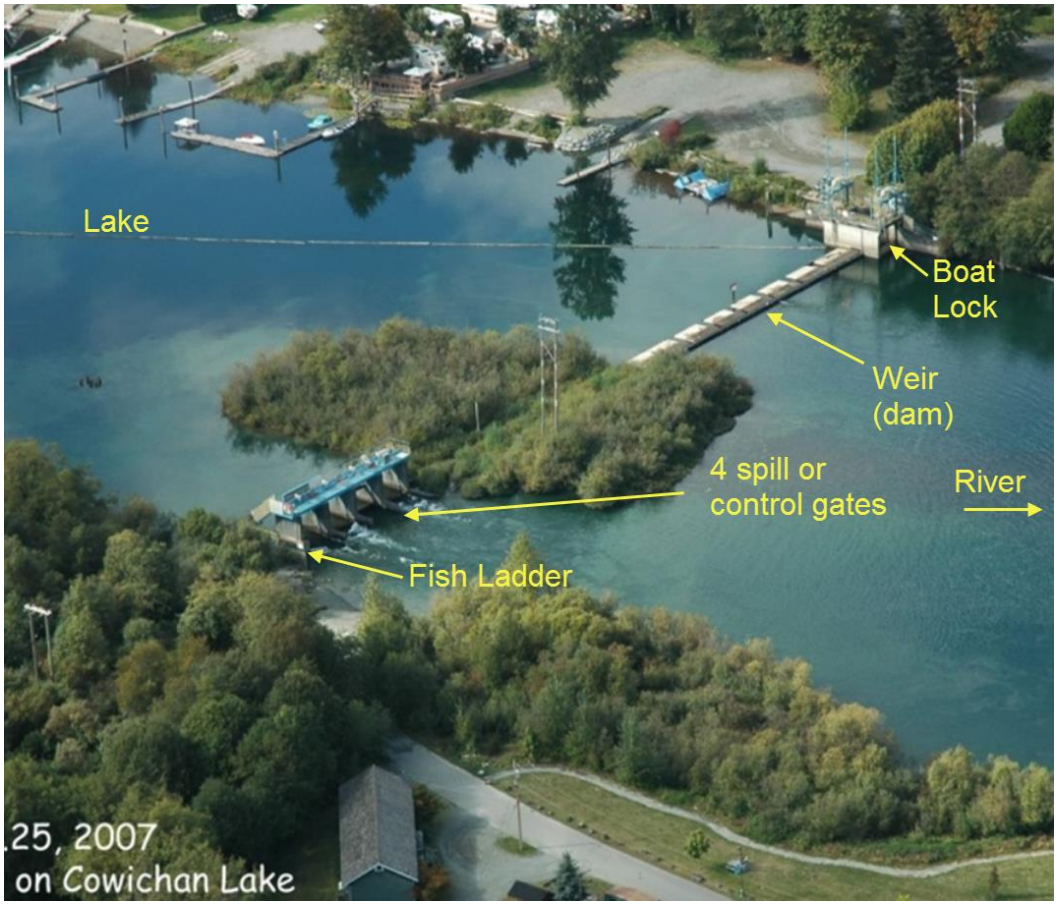
Cowichan Watershed Society

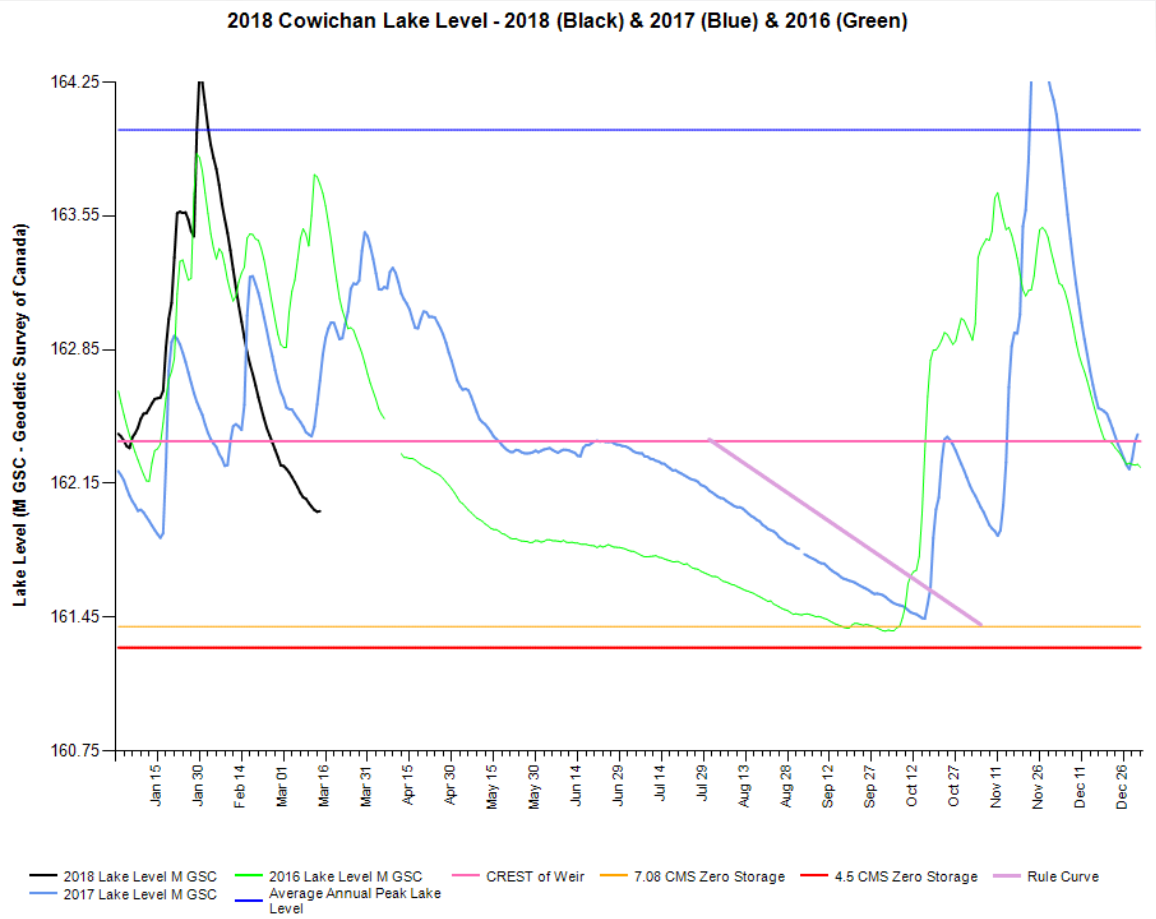
September 24, 2018,
Presentation by Brian Houle

Catalyst
Fresh thinking on paper

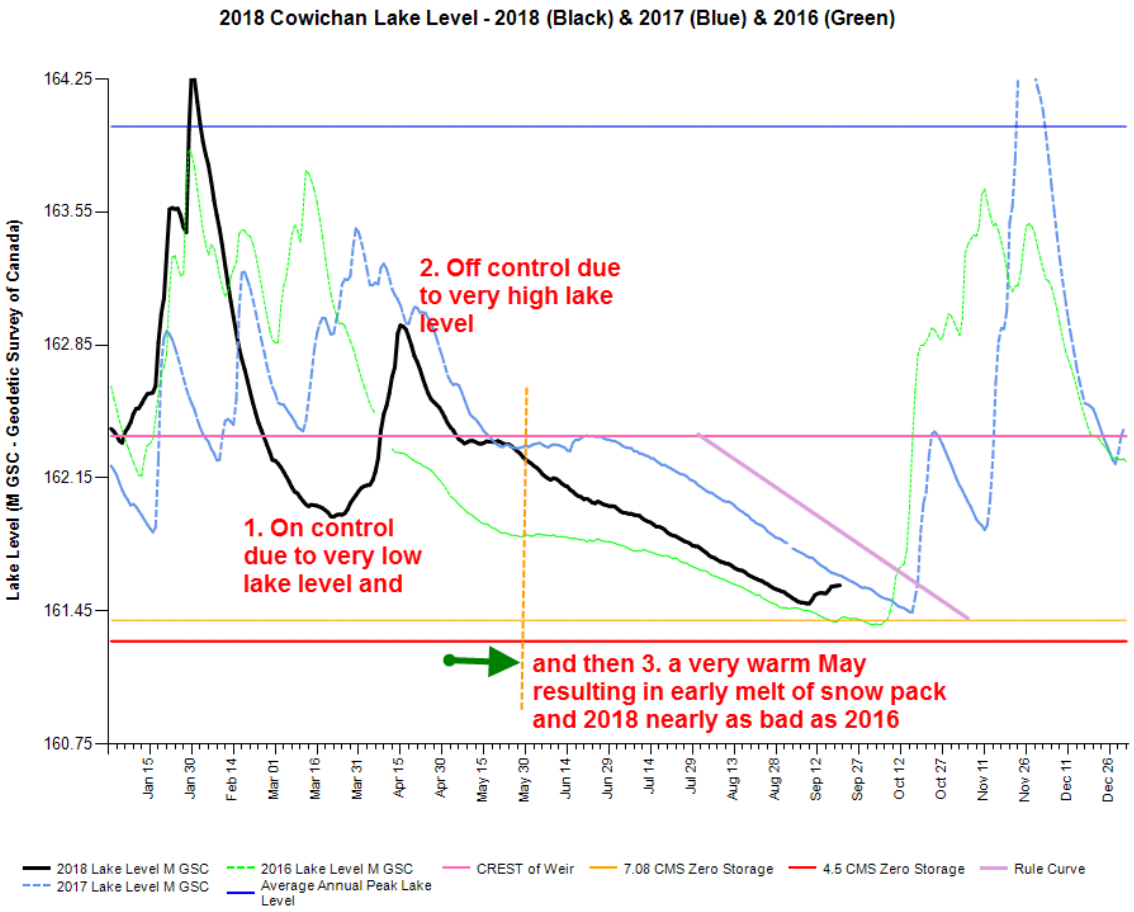
Aerial view of Lake Cowichan Weir



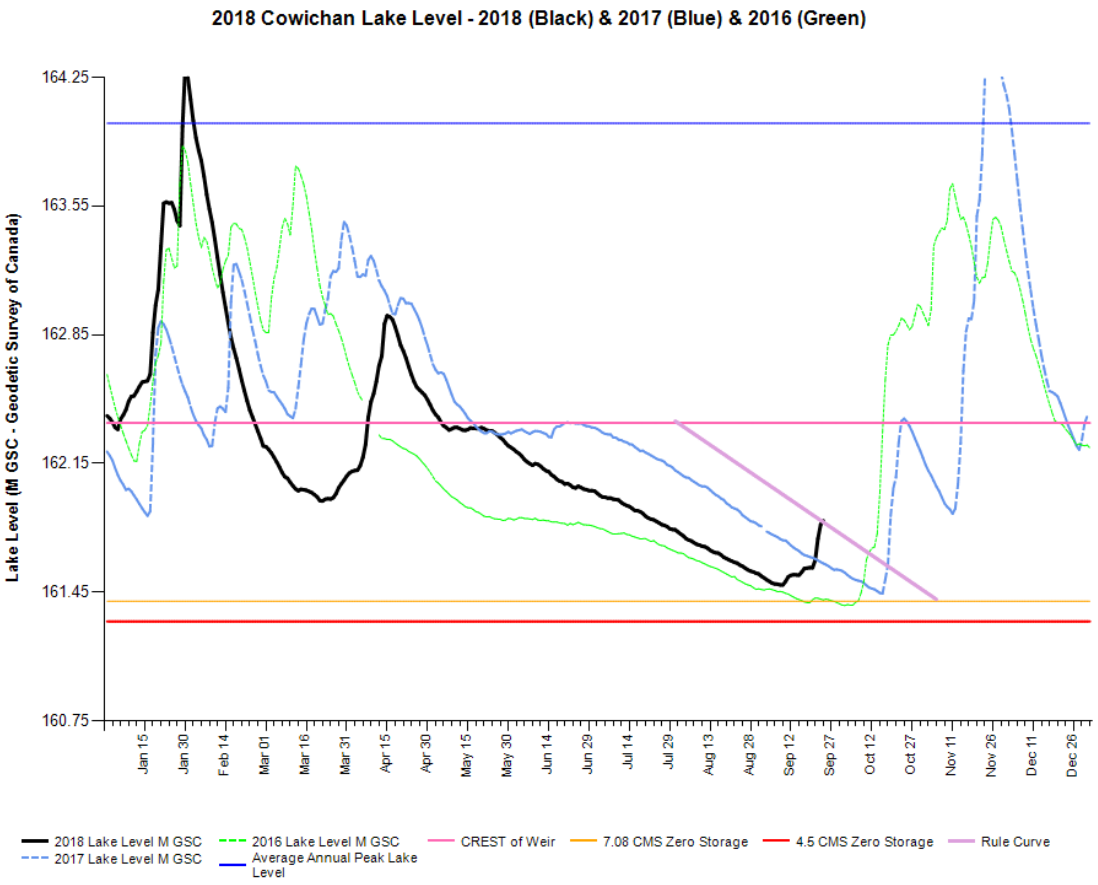
2018 began with very dry February & March resulting in lake level dropping to very low levels in March – early control requested and approved (& then not needed) see next slide



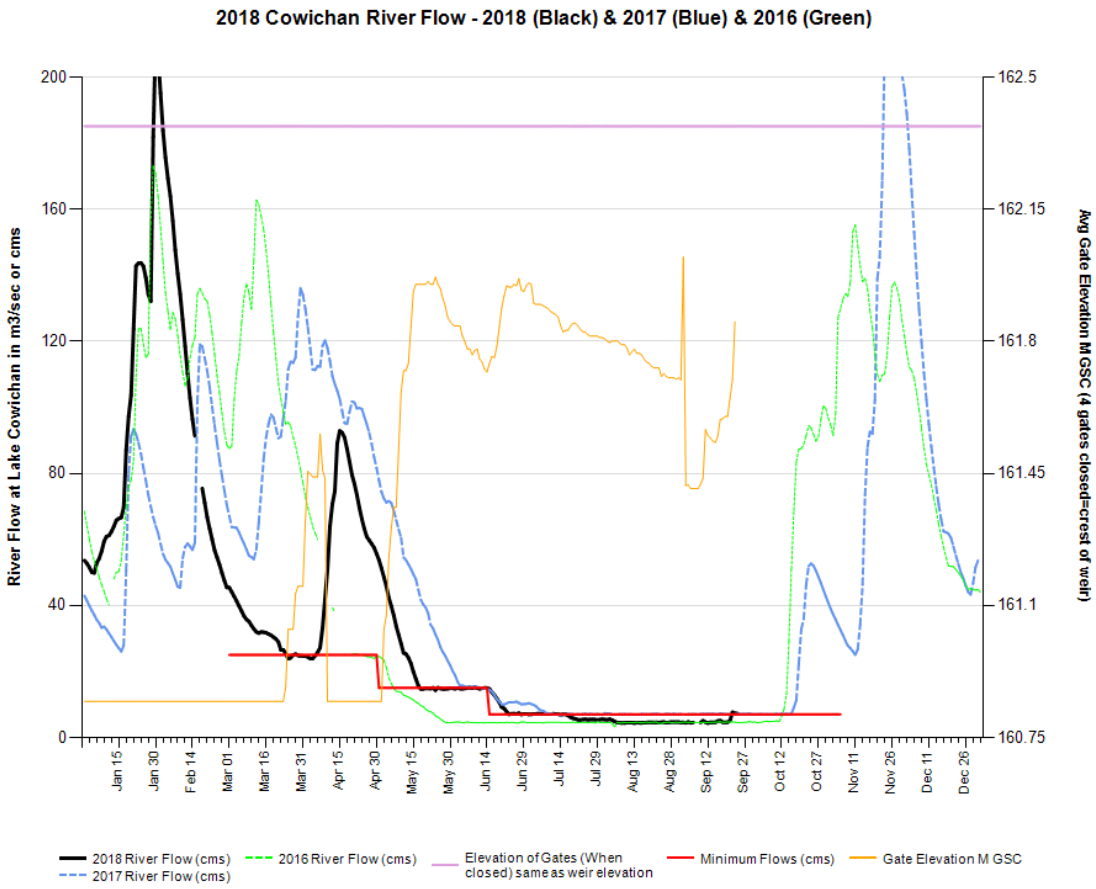
2018 began with as much snow as 2017 but early melt of snow pack resulted in a difficult year – 4.5 cms again in 2018



2018 (black line) showing three recent rainfall events with this past weekend bringing enough rainfall to fill lake to rule curve lake level. Added water level has resulted in release from lake rising from 4.5 cms to 7 cms – the license minimum flow

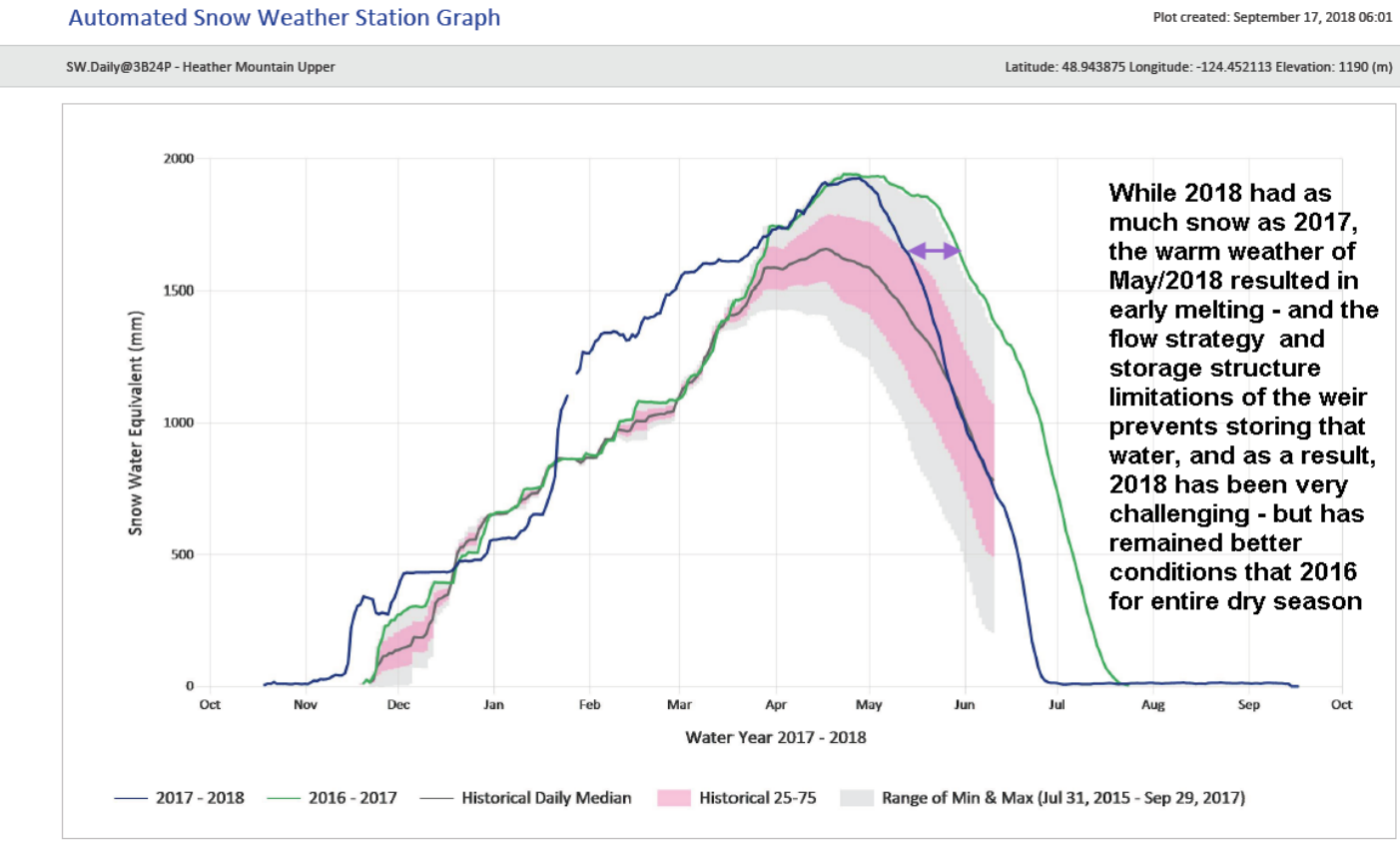


2018 included record high river flows in January, early control due to low lake level, and even with adequate snow pack, this year was a difficult year needing flow reduction to 4.5 cms - flow now returned to 7 cms

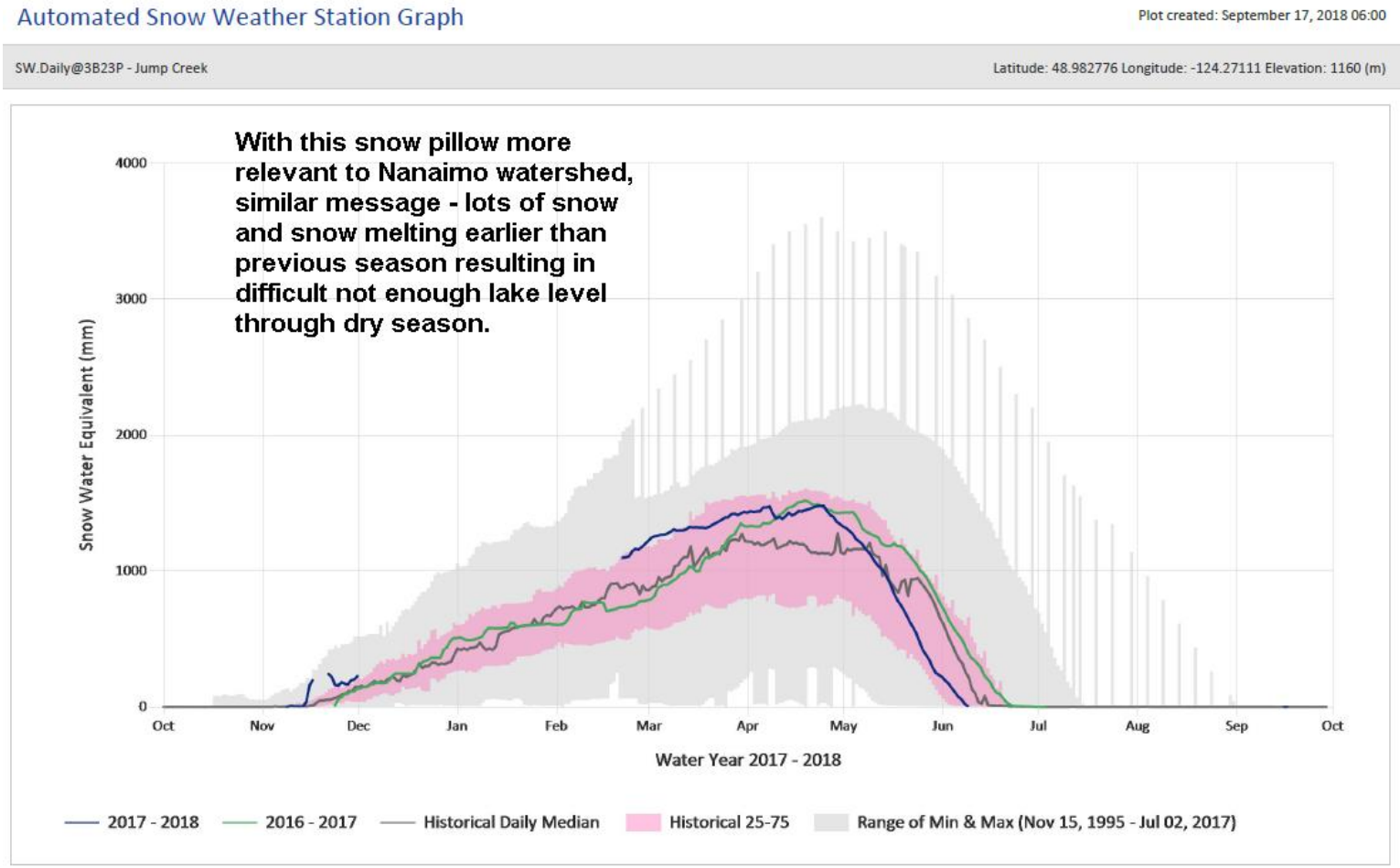


Heather Mountain snow pillow

2018 had reasonable snow pack but when early warm weather melted the snow pack in May, another difficult year



Jump Creek snow pillow showing significant snow pack – similar to Heather/Cowichan



2018 in conclusion:

- With 4 of last 5 years showing inadequate water supply to sustain 7.08 cms through dry season, expect 2019 most future years to be similar.
- Flow reductions down to 4.5 cms allows the depleted lake level to sustain base flow for 36% longer (14 days @7 cms = 19 days @4.5 cms)
- With weekend rainfall, 2018 will now conclude with a flow of at least 7.08 cms for remaining dry season.
- Watershed conditions continue to illustrate need for new weir to prevent flow reductions down to 4.5 cms – WUP process very important to Watershed

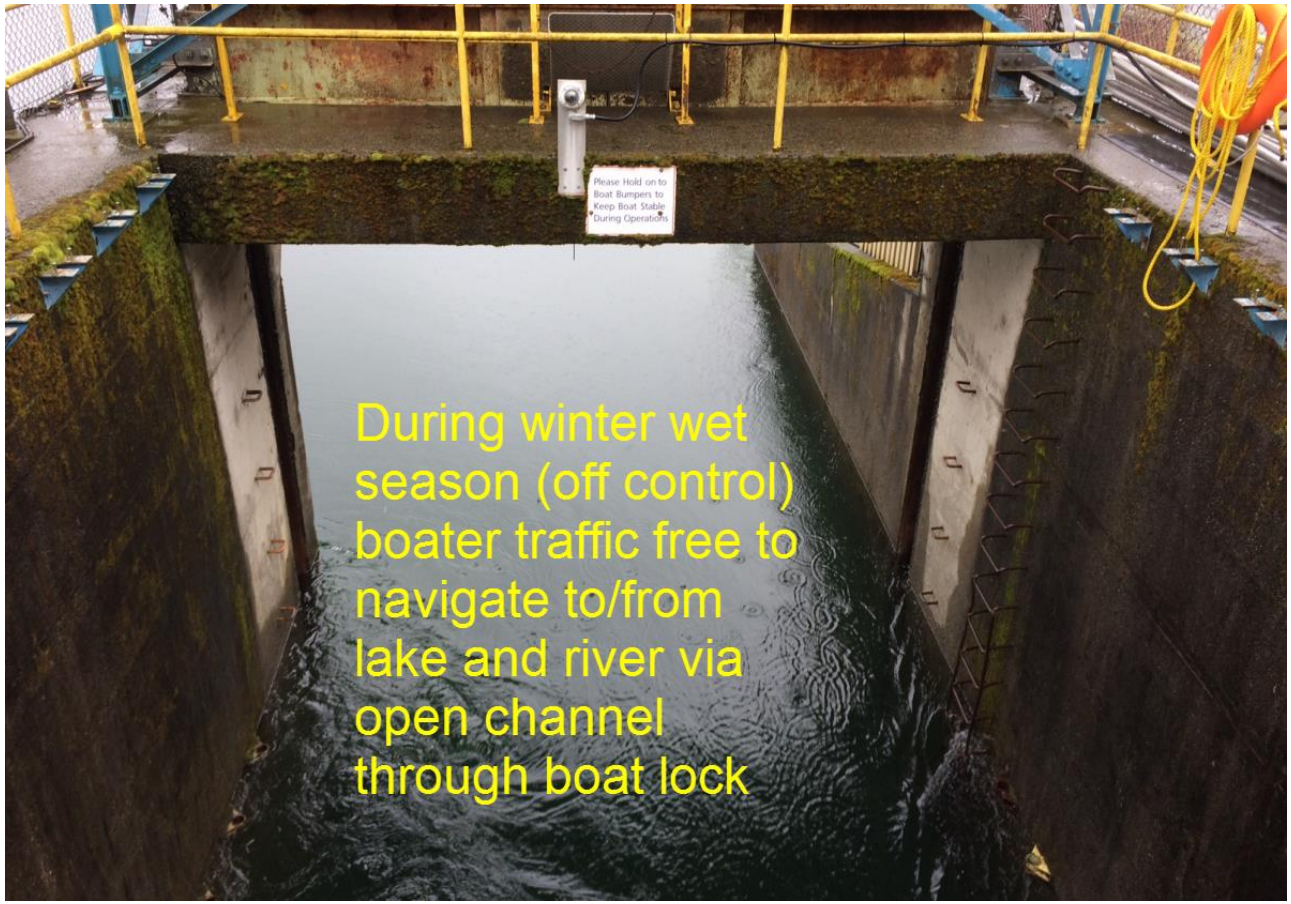
The following slides for those who have not yet been up to see weir area at lake

- Photo from South side – showing 4 control gates – fish ladder not visible at South end.
- 2 photos showing boat lock structure – where boats navigate through – at North end of weir
- 3 photos of the weir or dam showing how high winter lake levels rise above this structure. The pinch point below Green Dale Trestle constricts river flow and results in higher lake levels - high winter lake levels not related to structures of boat lock, weir and 4 control gates.

Cowichan Lake Weir, Boat Lock, Spill Gate Control Structure and Fish Ladder

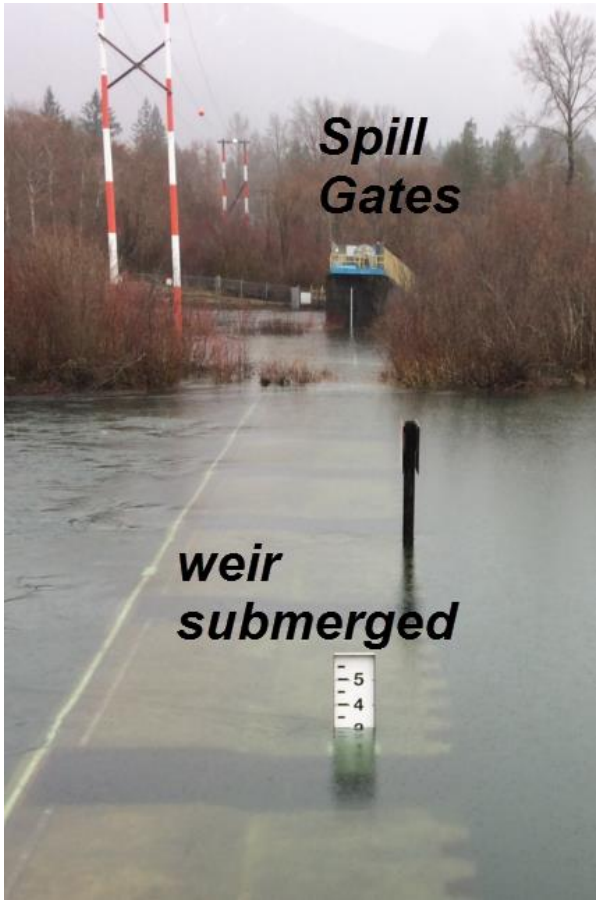
Winter season boat lock gates are raised

During wet season, gates are elevated



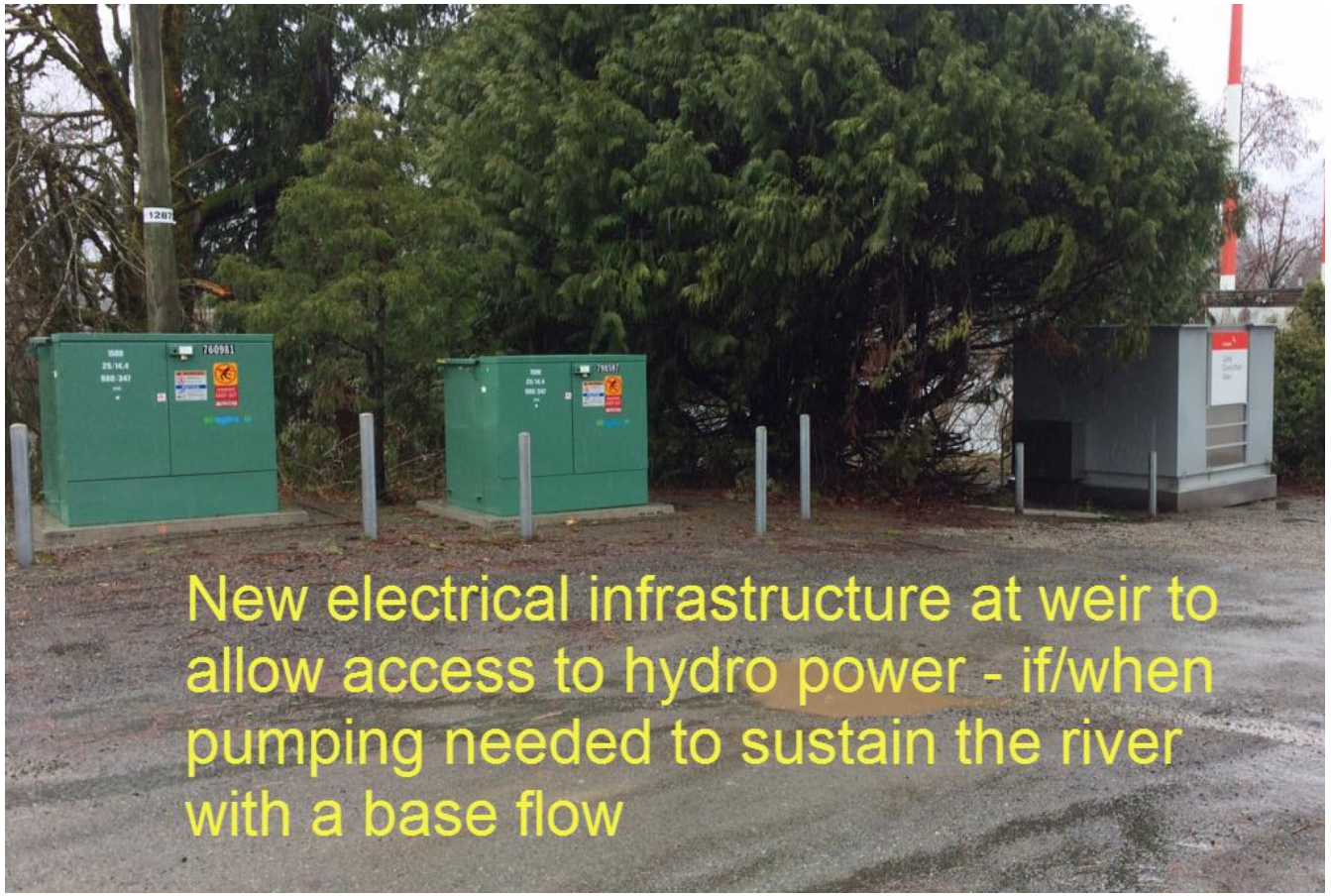
With high lake levels, weir submerged

View of weir and spill gate structure



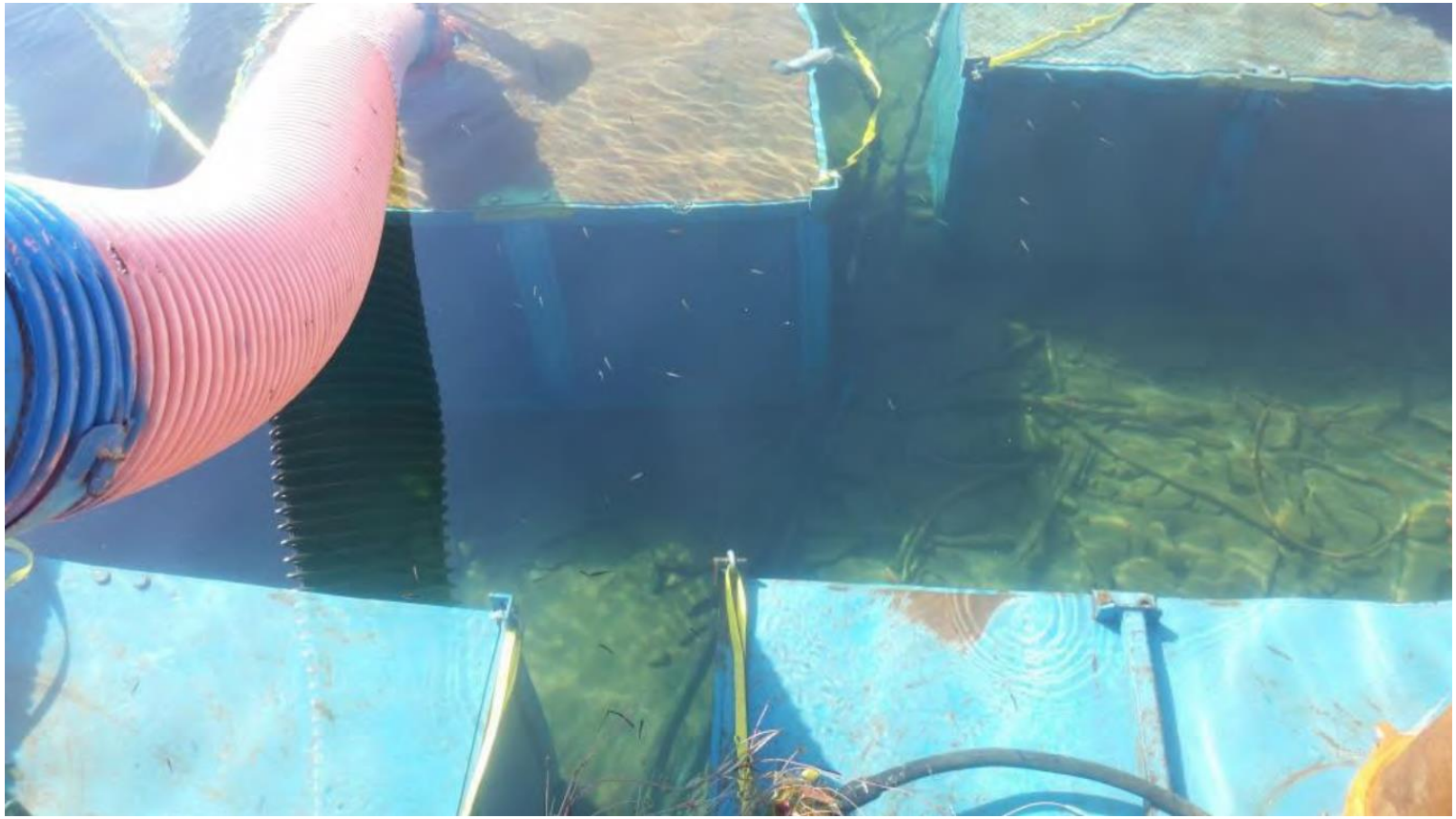
Looking North from on top of gate structure

New electrical infrastructure for pumps



While 20 pumps were trialed, 15 pumps required for base flow of 4.5 cms

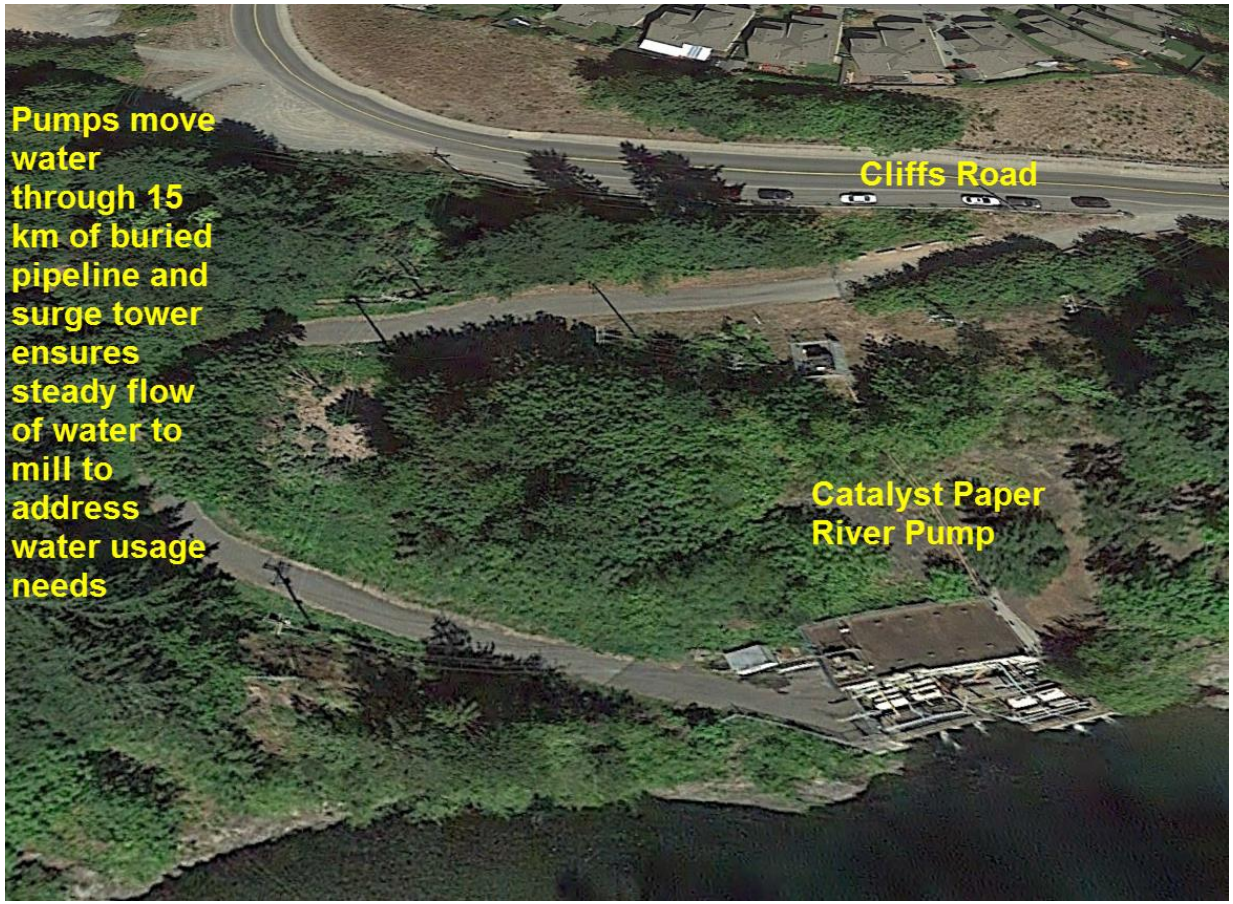
Pumps within screened box – small fish in area not evidently impacted by running pumps and at no risk



Catalyst Paper River Pump House

- Located on North side of River on Cliffs Road
- 7 installed pumps – 6 electrically connected and operable / one spare installed pump
- Pumps operated to meet demand for water at mill – starting and stopping pumps to meet water use needs
- Surge Tower just to North (West of Duncan Hospital) and pumps sustain water feed to mill
- 15 km pipeline to deliver water to mill filtration water treatment plant

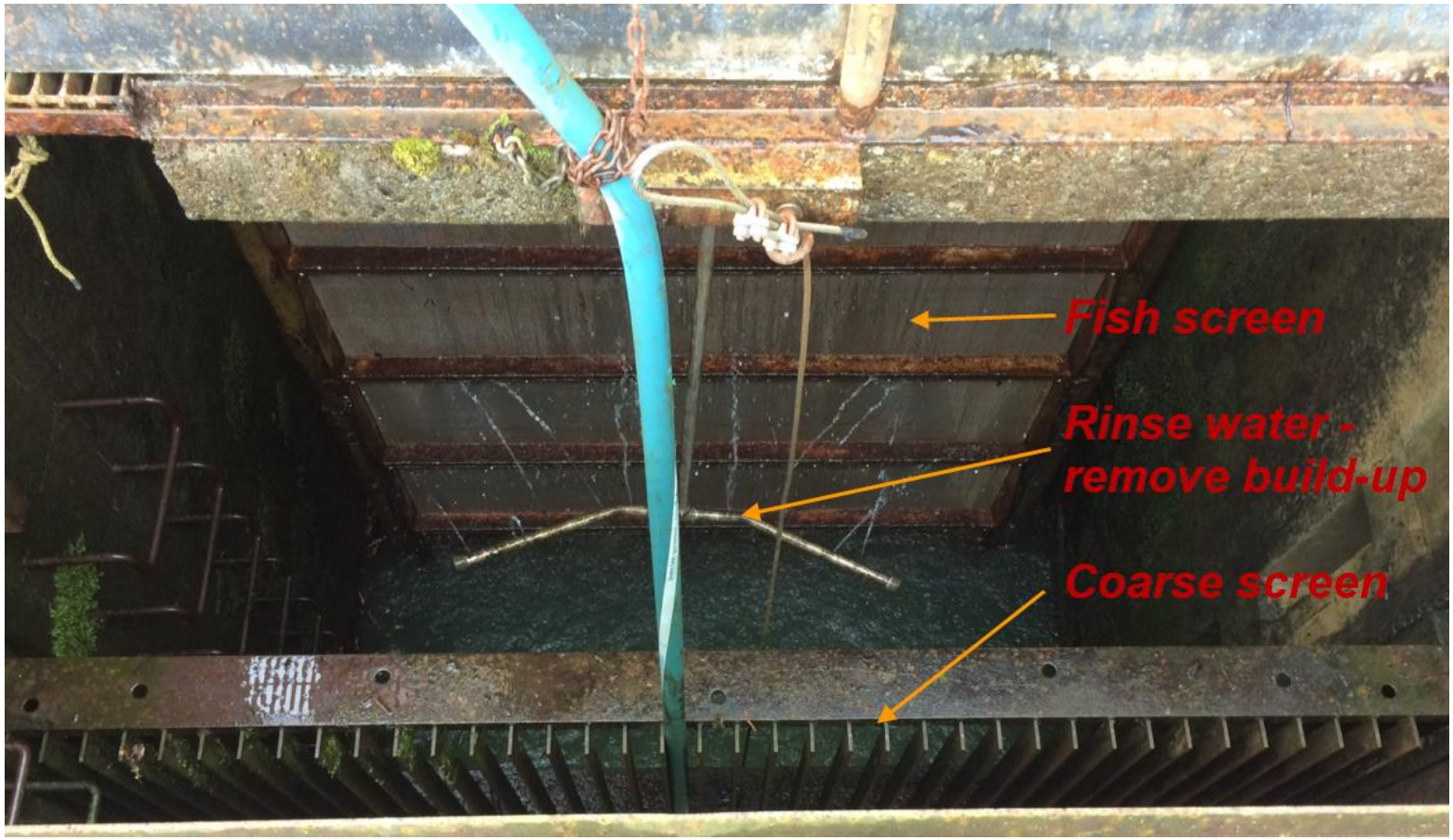
The pump house on Cowichan River is accessed from Cliffs Road



Looking up river from pump house

Looking down river from pump house

Coarse and fine screens: To ensure only water removed from Cowichan River



Fine screen – fish cannot pass through

Pump House equipped with 7 pumps

Shown are the motors

Long vertical shafts down to water level where pumps are located

Crofton treats all water from river to remove biological risk (sanitized) and to remove suspended solids (filtered)

Questions?