

Cowichan Weir Operations Review of 2015 and Review of 2016 year to date Conditions

Presented by: Brian Houle

February 29, 2016, Cowichan Watershed Board Meeting
CVRD Council Chambers - Duncan

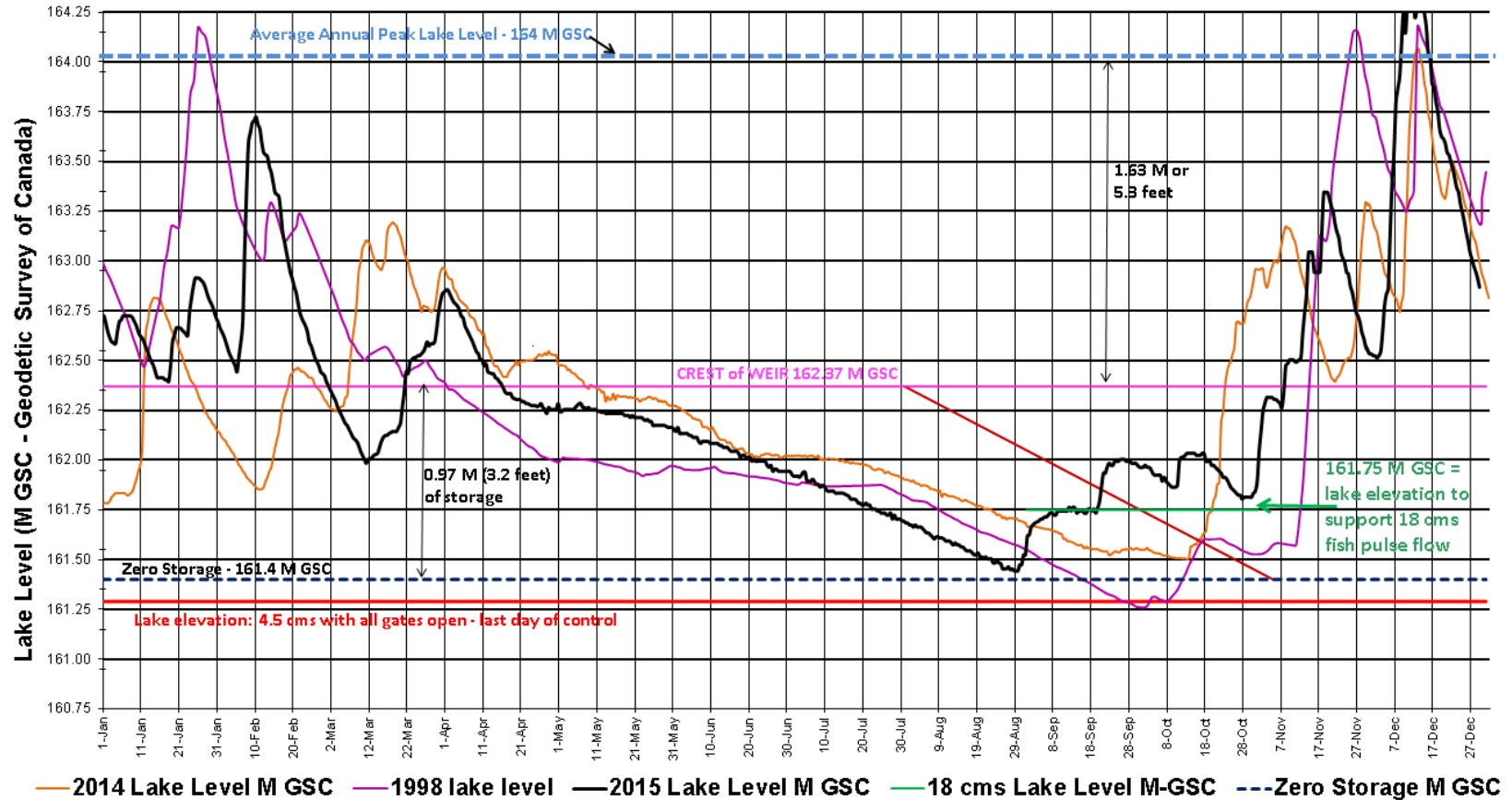
Agenda

- 2015 Year in review
- Active and planned initiatives to reduce risk of Cowichan River flows diminishing in the fall
 - Section 8 – Pumping from lake to river
 - Section 10 – stop logs for 12" added storage
 - CVRD Capital funding request for new weir
- 2016 Conditions Update
 - Current water & snow pack levels

Without Aug 31 rainfall event in 2015, pumping needed on about Sept 17 to sustain 4.5 cms

Cowichan Lake Level - 2015 (black) & 1998 (Purple) & 2014 (orange)

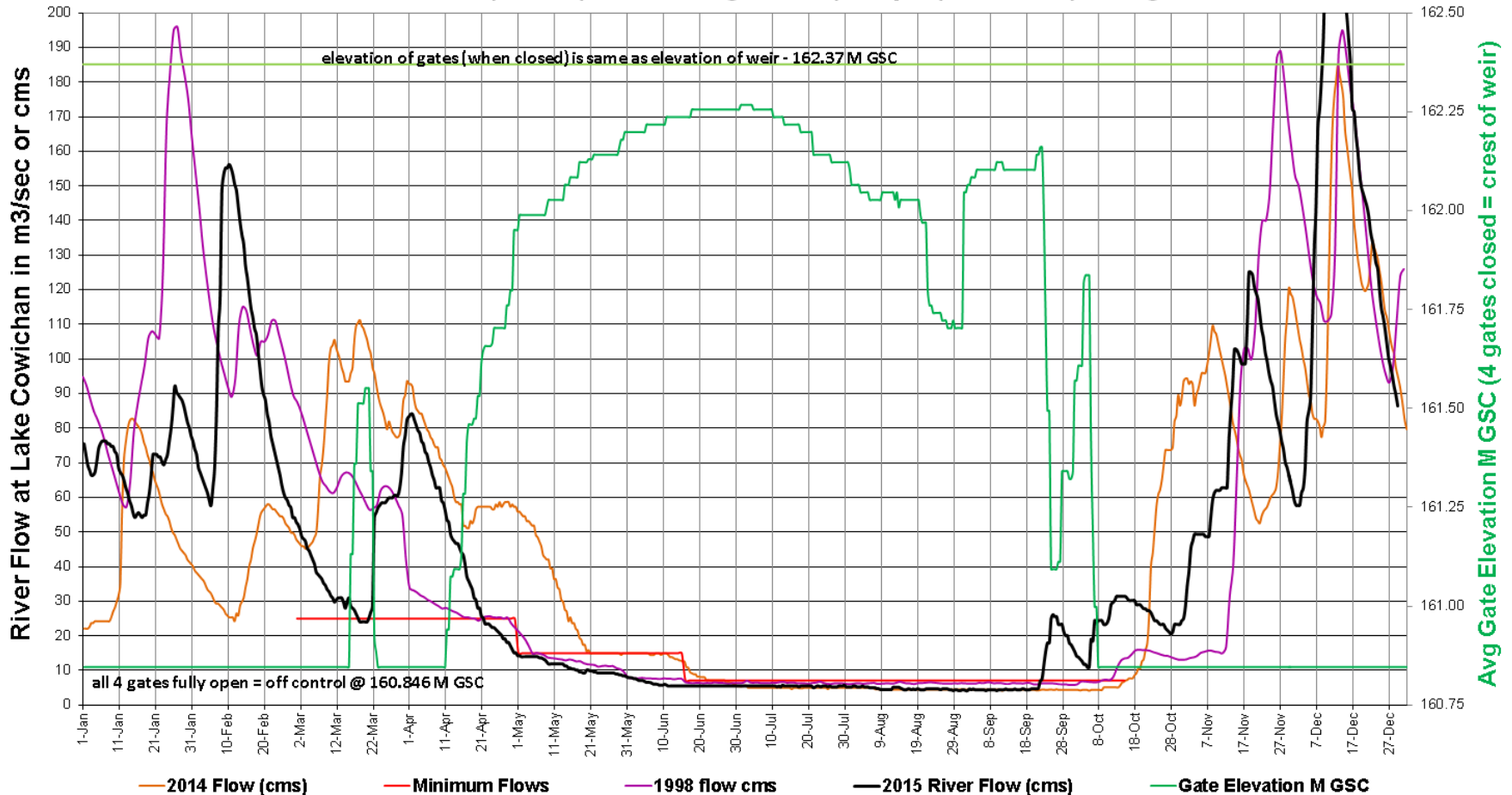
Chart prepared by Catalyst Paper Crofton Division



In 2015 river flows lowered to 4.5 cms on August 8, as it was done in 2014

2015 Cowichan River Flow (black) Including 1998 (Purple) & 2014 (orange)

Chart prepared by Catalyst Paper Crofton Division



Initiatives to resolve water supply

- Progress forward on Section 8 application
 - See subsequent slides for details
- Progress forward on Section 10 application
 - seismic assessment of existing weir in progress
 - Weir inspection delayed until water levels lower
- Support CVRD with future funding requests to build new weir structure with added storage
- To minimize the impact of Mill Operations on conditions in the Cowichan River below the river pump house, continue to reduce fresh water consumption at mill and maximize use of sea water substitution for cooling

Short, medium and long term strategy

- Immediate (2016 and 2017) – Section 8- FLNRO
 - Use pumps to sustain river in fall – FLNRO Section 8 application filed for 2016 and 2017 contingency
- Short/Med. term (2017-19)- Section 10- FLNRO
 - Assessing engineering of existing weir to allow temporary flash boards on weir top (12 inches / 30 cm)
 - 12" = 30 days @ 7 cms / 47 days @ 4.5 cms
- Long term (2019 onwards)
 - Working with CVRD & First Nations on concept addressing joint ownership of weir, storage license and operational approaches
 - Pursue other funding options given \$10 million not supported
- Continue forward with mill level initiatives to use less river water & especially during summer

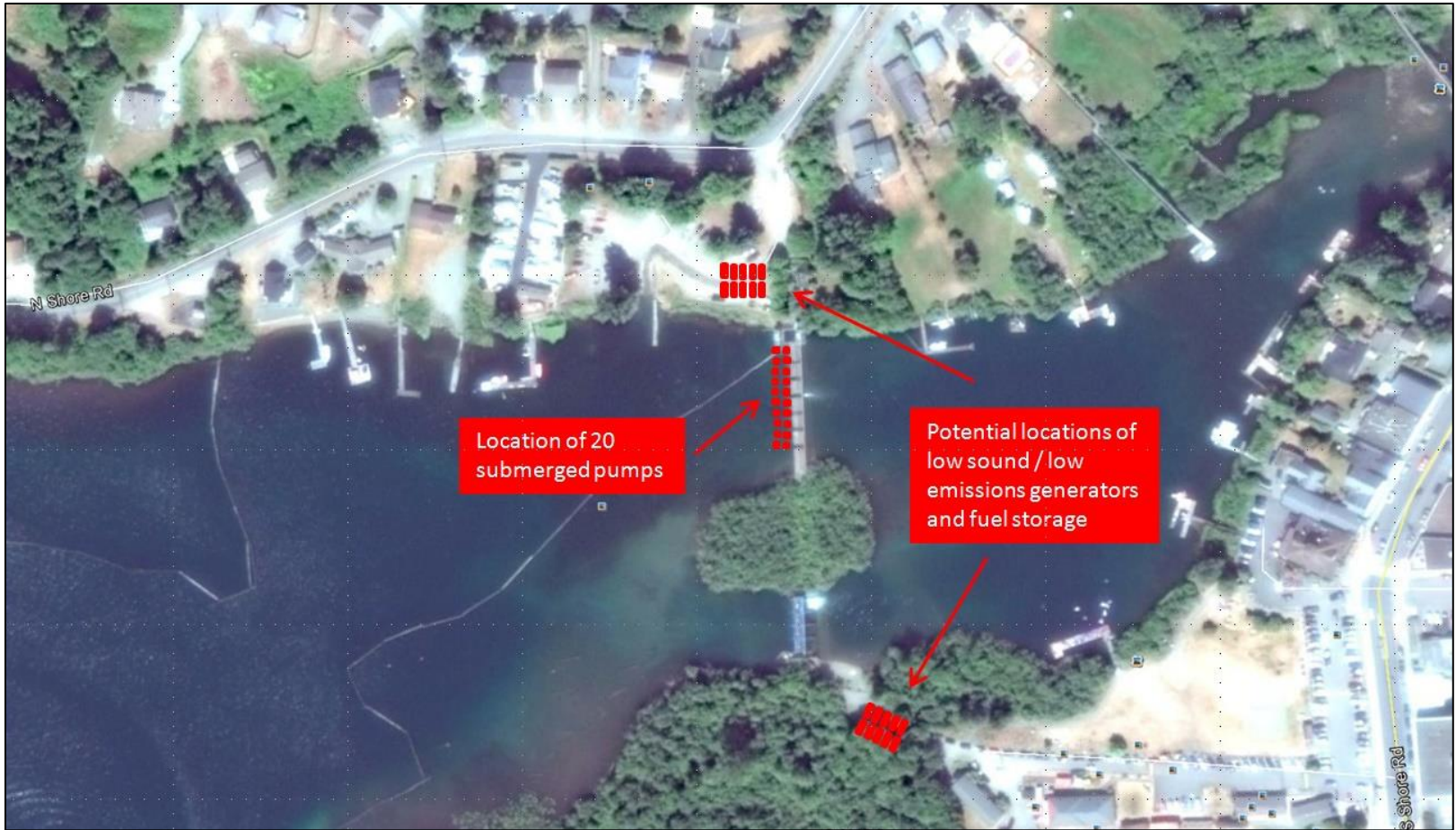
Immediate: Section 8 Application

- Worst case, last ditch approach to save river
- \$1 million estimated cost
- Installation of floating pumps
 - move water over the weir
 - operate for no more than 49 days lowering the lake by no more than 23 inches
 - fish screens on intakes
 - powered by soundproofed diesel generators on shore with full spill containment
- Independent environmental professional would monitor lake levels and impacts and report to regulator



Section 8 Pump-out proposed layout

Catalyst preference is Generators on North side

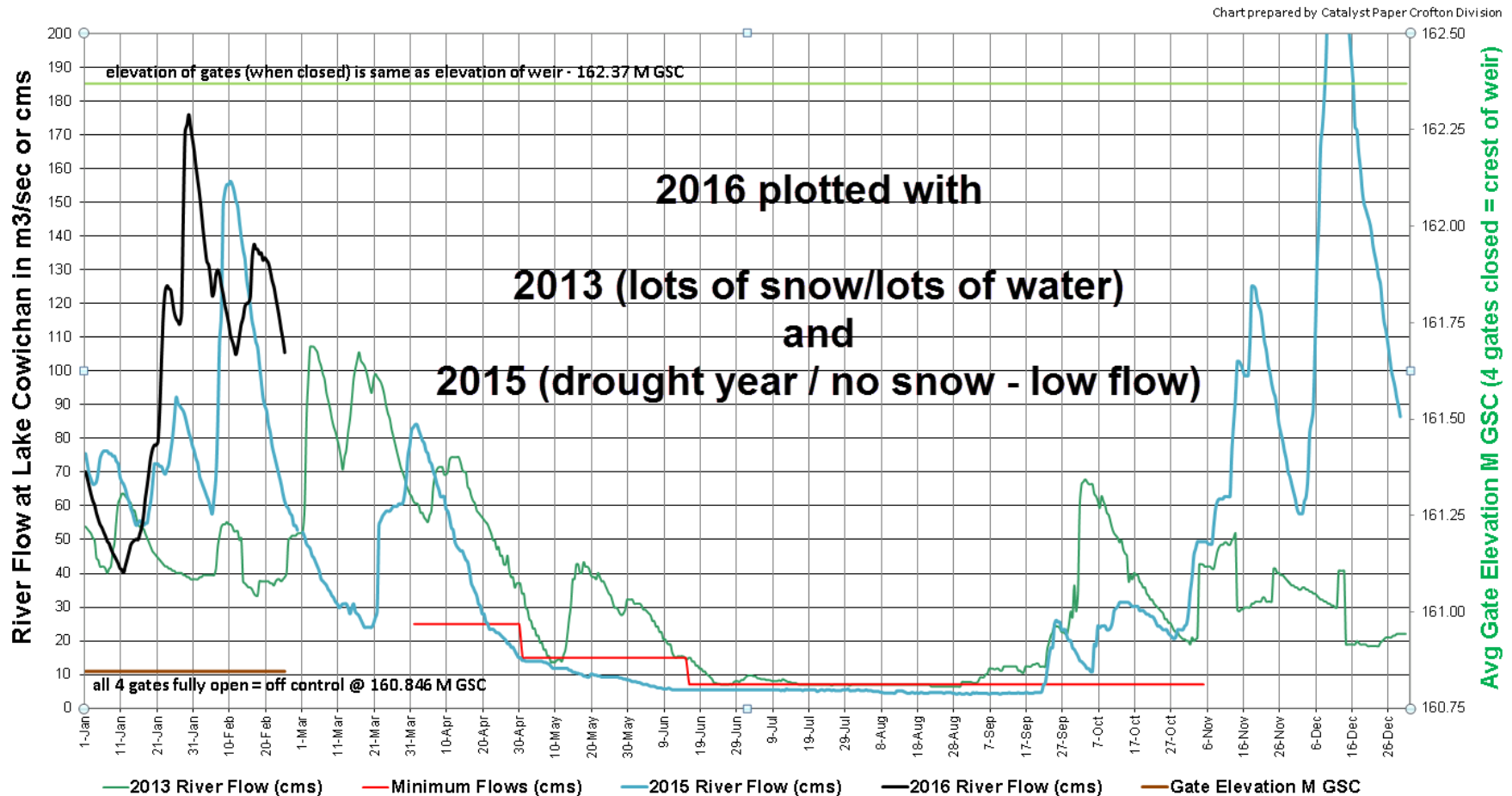


Current conditions in watershed

- The following slides present current conditions
- Current lake level and river flow are high as expected at this time of year
- Presentation includes current year, 2015 (as worst case) and 2013 (best case) when extra snow pack supported full supply into summer
- While 2016 currently showing less than average snow pack, a lot more snow than at this time last year
- Current plan is for weir to begin operating on April 1 – as per license

2016 trends to also highlight best case - 2013- and worst case -2015- years

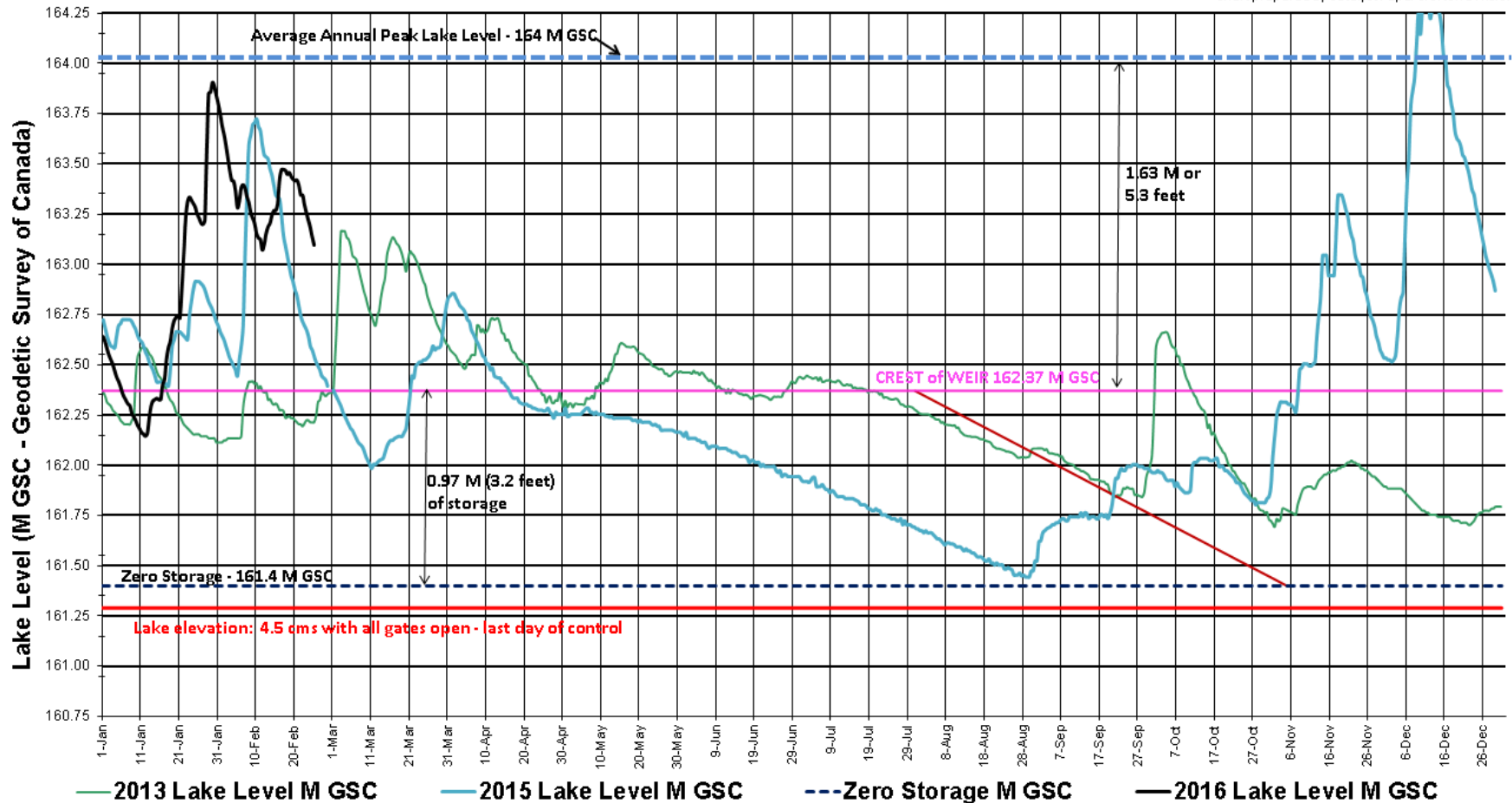
2016 Cowichan River Flow: 2016 (black) 2013 (Green) & 2015 (Blue)



Wet winter weather keeping lake level high

2016 Cowichan Lake Level - 2016 (black) & 2013 (Green) & 2015 (Blue)

Chart prepared by Catalyst Paper Crofton Division



Jump Creek
(Nanaimo Watershed)
– while not confident with value – reporting >50% of normal snow pack

3B23P - JUMP CREEK

Drainage: Vancouver Island
Latitude: 48° 58' N
Longitude: 124° 16' W
Elevation: 1,134 m

Owner: Ministry of Environment
Year Established: 1995
Sensors: Air temperature, precipitation, snow depth, snow pillow, and snow scale

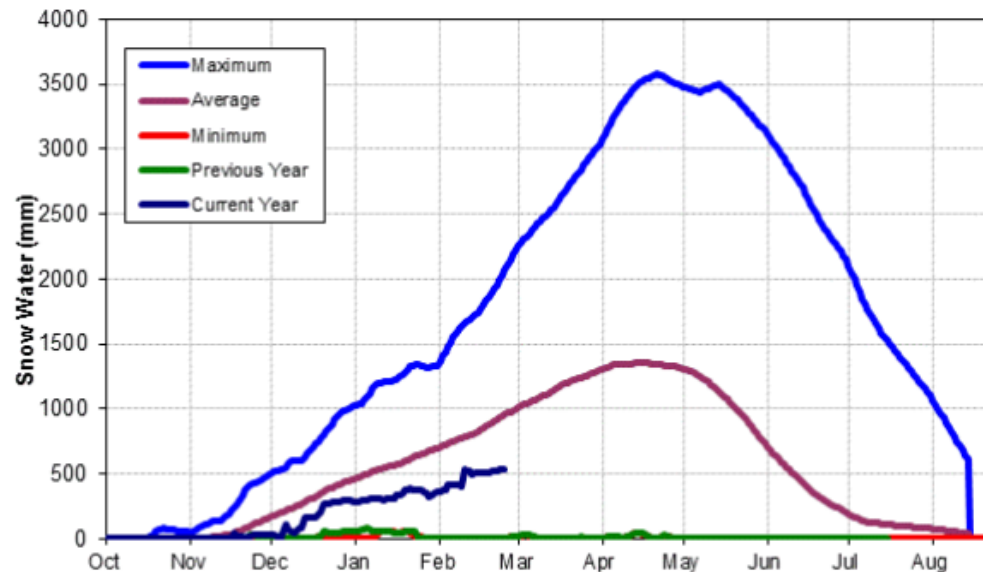
* **Note:** snow water equivalent between 2015-11-20 and 2016-02-09 is incorrect because of snow scale malfunction

Download last 7 days of hourly real-time data*:

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Current to noon 2016-02-24
Updated 2016-02-25 10:23:45 AM

Catalyst

Fresh thinking on paper

Heather Mountain Snow Pillow – photo taken about Feb. 11, 2016 by BC MOE



New Heather Mountain snow pillow has issues but manual measurement showed reasonable snow pack week of Feb 11

3B24P - HEATHER MOUNTAIN UPPER

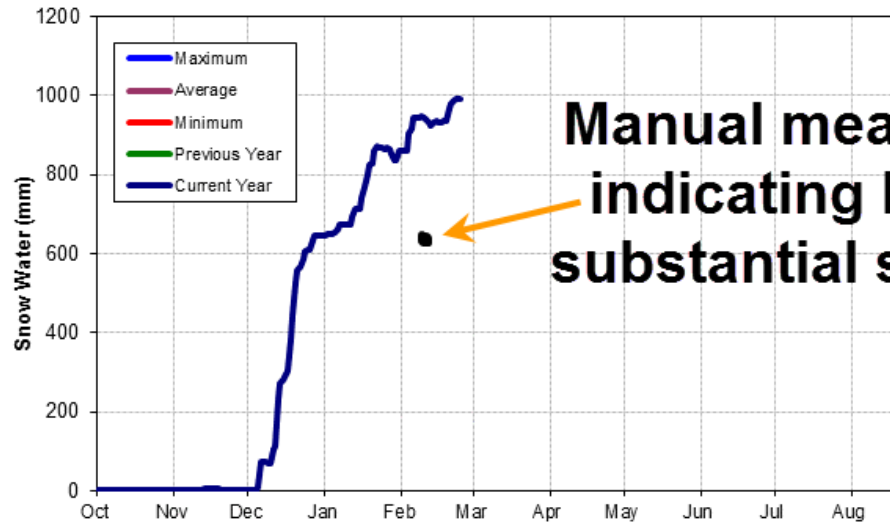
Drainage: Vancouver Island
Latitude: 48° 57'
Longitude: 124° 33'
Elevation: 1,190 m

Owner: Ministry of Environment
Year Established: 2015
Sensors: Air temperature, snow pillow, and snow depth

Note: Reported snow water equivalent is incorrect (too high). Station is scheduled for maintenance at end of season

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Manual measurement indicating less - but substantial snow pack

Current to noon 2016-02-24
Updated 2016-02-25 10:23:45 AM

In Closing – questions/comments

- Current snow pack provides some confidence that both the 25 and 15 cms fisheries flow windows could be supported this spring
- Warm weather can melt the snow pack too soon to be able to retain that water in the lake
 - and equates to another difficult water shortage this summer
- Weekly conference call expected to begin in April along with operation of Weir. Weekly calls include key stakeholders and river flow adjustments are reviewed during call