

# **Cusheon Lake Hydrometric and Water Quality Data 2018**

**Salt Spring I., B.C.**

**They are ordered with the most recent appended to the end of the document, so please scroll down.**

**These reports were presented monthly  
at Salt Spring Island Watershed Protection Alliance  
regular meetings**

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## Report re: Cusheon Lake for SSIWPA Jan 19, 2018

1. The lake level on Jan 17, 2018 was 1.6 m while the level last year on Jan 14, 2017 was lower at 1.37 m.

2. No Secchi disk is taken during the cold winter months but the CRD gave a value for Turbidity on Dec.13, 2017 of 0.72 NTU. The limit is 1.0 NTU. Jan will be posted at the end of the month.

3. The creeks are flowing well. Flow height in Cusheon Creek on Jan 18, 2018 was 0.53 m. Last year the flow was 0.35 on Jan 18, 2017.

4. Precipitation received at GISS:

Jan 2015 --- 95.2 mm

Jan 2016 --- 146.3 mm

Jan 2017 --- 45.2 mm

Jan 2018 --- 91.4 mm

5. The beaver dam is still in place and has not been washed out this year. However, it still could wash out; the water is flowing well over the top of the dam.

### Nephelometric **Turbidity** Unit (**NTU**)

The units of turbidity from a calibrated nephelometer are called Nephelometric Turbidity Units (**NTU**). To some extent, how much light reflects for a given amount of particulates is dependent upon properties of the particles like their shape, color, and reflectivity.

### Note:

The creek height reported here is directly from the staff gauge reading. It has not been adjusted to elevation above sea level.

In the data spreadsheets for this lake, the elevation was corrected to metres above sea level, according to a Polaris survey completed by the Island Stream and Salmon Enhancement Society in 2011.

## Report re: Cusheon Lake for SSIWPA Feb 23, 2018

1. The lake level on Jan 30, 2018 - 1.856 m,  
Jan 31, 2018 - 1.772 m  
Feb 02, 2018 - 1.566 m (after just 4 days level dropped 30 cm)  
Feb 04, 2018 - 1.456 m  
Feb 11, 2018 - 1.286 m  
Feb 22, 2018 - 1.236 m
2. The creeks are flowing well. Water depth – at Cusheon creek outflow just past Hatchery.  
Jan 30, 2018 - 0.85 m  
Jan 31, 2018 - 0.85 m  
Feb 04, 2018 - 0.58 m  
Feb 11, 2018 - 0.42 m
3. Secchi disk was 0.37 metres on Jan 31 2018 but improved to 3.0 metres on Feb.22
4. Precipitation received at GISS:  
Feb 2015 --- 88.1 mm  
Feb 2016 --- 106.2 mm  
Feb 2017 --- 114.3 mm  
Feb 2018 --- 39.6 mm  
Jan 2018 --- 252.2 mm
5. The beaver dam is no longer in place as it washed out sometime overnight on Jan.30 or morning of Jan.31, 2018. It is clear under the bridge.



## Report re: Cusheon Lake for SSIWPA March 26, 2018

1. The lake level Jan 30 was 93.106 metres above sea level (MASL)

Feb 22 was 92.486 MASL

Mar 26 was 92.416 MASL

2. The creeks are flowing. Flow rate in creek on Jan 31 was 92.336 MASL and is 2.101 m<sup>3</sup>/s

Feb 11 was 91.934 MASL and is 0.1698 m<sup>3</sup>/s

Mar 26 was 91.8 MASL and is 0.0648 m<sup>3</sup>/s

3. There is no Secchi disk measurement this month as the person who takes it was away and then ill. Usually measurements are done weekly beginning in April.

4. Precipitation received at GISS:

Mar 2018 --- 38.8 mm -- in 2017 it was 74.7 mm -- and in 2016 it was 159.8 mm

Feb 2018 --- 51 mm

Jan 2018 --- 252.2 mm

This has been the driest March in the past 10 years. The average precipitation for March is 87 mm

5. The beaver dam is starting to be built but they are very slow builders. Several beavers have been lost in the population due to illness and vehicle accidents or they have been hunted.

While beavers are considered to be pests by some, scientists actually have proven that beavers are a "Keystone" species in North America. This means that beavers play a crucial role in biodiversity. Innumerable species rely either partly or entirely on beaver-created habitat, and many of these species are either threatened or endangered. Therefore, whenever we can coexist with beavers, we are providing the habitat necessary for supporting many other species, and protecting the web of life upon which we all depend. They actually help the quality of our water in Cusheon Lake if they build the dam early enough to catch the spring rain.

## Report re: Cusheon Lake for SSIWPA June 26, 2018

1. The lake level June 4<sup>th</sup> 2018 was 92.682 metres above sea level. This is around the same level it was back in 2014 before all the droughts.
2. The creeks have stopped flowing. Salmon Enhancement Society is pumping water to maintain the flow down the creek. On May 19 when Tyler Brook was still flowing the measurement was 0.072m.
3. The Secchi disk measurement on June 4<sup>th</sup> was 3.85m. This was not as good as last year for the same time period. The lake is a little turbid with a reading of .52 NTU. The colour was above the allowed limit of 15 TCU with readings of 20 TUC on May 9 and 16 TUC on May 23
4. Precipitation received at GISS:
  - Apr 2018 ---97mm
  - May 2018 --- 0.5 mm
  - June 2018 ---13.5 mm
5. There is a small beaver dam in the outlet of the creek. There are also fish fry in the creek.

## Report re: Cusheon Lake for SSIWPA July 20, 2018

1. The lake level on July 20<sup>th</sup> 2018 was 92.568 m above sea level.  
In the lake at a depth of 7 m there is no O<sub>2</sub>. The reading is negative which indicates a presence of H<sub>2</sub>S.
2. Secchi disk measurement on July 20 was 4.75 m this indicates fairly clear water.  
Lake water temp was 23.3 C which is similar to last year.
3. Turbidity NTU on June 20<sup>th</sup> was .75 (limit is =1)  
Colour on June 20<sup>th</sup> was 20 (limit is +15)  
Total coliforms in the raw water was 460 /100ml  
Readings are not available for July from CRD website until Aug.
4. Metals 1 Aluminum to Copper – amounts in the raw water were within allowable range  
Metals 2 Iron to Zinc- amounts of iron seem to be increasing and manganese is also high during parts of the year
5. Precipitation received at GISS:  
It has been a dry late spring early summer since the rains in April.  
All the fire bans are now in place.  
Environment Canada is predicting a lower amount of precipitation than usual.  
  
Apr 2018 ---97mm =(more rain than in recent years)  
May 2018 --- 0.5 mm ( records were broken)  
June 2018 ---26.7 mm (similar to the last 3 years)  
July 2018 ---1.5  
Total amount of rain received this year according to this gauge is 468.5 mm since January.  
In recent years the island has only been receiving between 700 and 800 mm per year.
6. Parasites Report from CRD Beddis website showed Cryptosporidium cysts 4.4 on May 11. The allowed limit is 0. It is very tolerant to chlorination but UV is effective.

## Report re: Cusheon Lake for SSIWPA Sept 21, 2018

1. The lake level on Sept 6 2018 was 92.354 m above sea level.  
And lake level on Sept 19 2018 was 92.354 m above sea level  
In the lake at a depth of 6m there is no O<sub>2</sub>. The readings are negative below this and indicate a presence of H<sub>2</sub>S or William suggested that it might be methane.
2. Secchi disk measurement on Sept 6, 2018 was 4.8 m and on Sept 19 it was 4.2 m this indicates fairly clear water but there is noticeable algae.  
Lake water temp was 17.9 C. and much cooler than summer.
3. Turbidity NTU on Aug 22, 2018 was 0.53 (limit is =1)  
Colour in raw water was 16 (limit is +15)  
Total coliforms in the raw water on Aug 22, 2018 was 650/100ml and on Sept 12, 390/100ml  
E.coli readings in raw water were 10/ 100 ml on both dates. This is higher than in 2017 where readings ranged from 1-4 /100ml.
4. Precipitation received at GISS:  
July 2018 ---1.5 mm  
Aug 2018 --- 3.5 mm  
Sep 2018 ---25.1 mm  
Total amount of rain received this year according to this gauge is 497.1 mm since January.  
In recent years the island has only been receiving between 700 and 800 mm per year.
5. The data logger was installed on Sept 14 2018 and it will take readings every 10 minutes.

## Report re: Cusheon Lake for SSIWPA Nov. 23, 2018

1. The lake level on Nov. 23 2018 was 92.478 m above sea level. Level is below what is usually is at this time.
2. Secchi disk measurement on Nov. 23 was 5 m fairly clear water.  
Lake water temp was 8.3 - 8.5 C with oxygen right to the bottom of the lake
3. Turbidity NTU in raw water on Oct 17, 2018 was 0.65 (limit is =1)  
Colour in raw water was 16 (limit is +15)  
Total coliforms in the raw water on Oct 17, 2018 was 95/100ml  
E.coli readings in raw water were 1 /100 ml. These readings lower than in 2017 .
4. Precipitation received at GISS:  
Sep 2018 ---64.1 mm higher than 2017 --- 22.3 mm  
Oct 2018 --- 84.1 mm a littler higher than 2017 – 76.2 mm  
Nov. 2018 --- 82.3 mm lower than 2017 178.6 mm  
Total amount of rain received this year according to this gauge is 702.4 mm since January.  
This is a small amount above the 698 mm received for the total year in 2017
5. The data logger was uploaded by William on Nov. 22 2018 it took readings every 10 minutes.