



**REPORT TO REGIONAL WATER SUPPLY COMMISSION
MEETING OF WEDNESDAY, DECEMBER 5, 2012**

SUBJECT WATER QUALITY TRENDS IN SOOKE LAKE RESERVOIR IN OCTOBER 2012

ISSUE

To provide information on the water quality conditions observed in Sooke Lake Reservoir during October 2012 and compare these data with those from previous years and long-term averages.

BACKGROUND

Physical Parameters

Water Levels. In October, due to low rainfall in 2012, the water level in Sooke Lake Reservoir dropped below the levels observed in October 2010 and 2011 (**Figure 1**), reached its lowest level of 182.59 on October 25, a drop of 4.16 m from full pool and then started to rise again.

Water Temperature. The water temperature throughout October remained slightly below the long-term average as well as below the temperatures observed in October 2010 and 2011 (**Figure 2**). (**Note:** The small circles on the chart show the extent of water temperature variation in previous years.)

Water Clarity

Turbidity. During October, the turbidity in Sooke Lake Reservoir continued to remain well below the 1.0 NTU turbidity limit and was better (lower) than the 10-year average and similar to the turbidity observed in 2010 and 2011 (**Figure 3**).

Water Transparency. Similar to turbidity, the transparency of the water in Sooke Lake Reservoir in October continued to be much better (clearer) than the 10-year average (**Figure 4**) and broadly similar to that in October 2010 and 2011. The transparency of the water is continuing to return to the very clear water observed prior to raising the water level in the reservoir.

Bacteria

Total Coliform Bacteria. In October, the total coliform concentrations in the raw source water entering the Japan Gulch Disinfection Plant from Sooke Lake Reservoir continued to be well below the 10-year average and similar to levels observed in 2010 and 2011 (**Figure 5**). *E. coli* concentrations remained low throughout October and well below the USEPA limit to remain an unfiltered supply (see insert in **Figure 5**).

Nutrients

Phosphorus. In October, the total phosphorus level in both the north and south basins of Sooke Lake Reservoir continued to remain lower than the 10-year average and were slightly lower than levels observed in 2010 and 2011 (**Figures 6 and 7**).

Nitrogen. In October, the total nitrogen levels in both the south and north basins were lower than the 10-year average (**Figures 8 and 9**) and broadly lower than the levels in 2010 and 2011.

Chlorophyll-a

In October, chlorophyll-a concentrations were lower than the 10-year average throughout Sooke Lake Reservoir (**Figures 10-12**) and broadly similar to the levels in 2010 and 2011. These concentrations are relatively low for a surface water reservoir and reflect the normally low levels of nutrients (especially phosphorus) in this water body.

Algae

Dinobryon divergens (a golden-brown alga) concentrations peaked in the beginning of October but with values that were well within the range observed in past years. Overall algal productivity throughout Sooke Lake Reservoir was low in October and there were no algal associated water quality issues.

CONCLUSION

The water quality tests conducted for Sooke Lake Reservoir in October continue to show good quality source water with no water quality issues.

RECOMMENDATION

That the Regional Water Supply Commission receive this report for information.

Stewart Irwin, M.Sc.
Senior Manager, Water Quality Division
Environmental Sustainability

Larisa Hutcheson, P. Eng.
General Manager, Environmental Sustainability
Concurrence

Ted Robbins, B.Sc., C. Tech.
A/General Manager, Integrated Water Services
Concurrence











