CAPITAL REGIONAL DISTRICT

Agenda Item #13
REPORT #RWSC 2007 - 15

REPORT TO REGIONAL WATER SUPPLY COMMISSION
MEETING OF WEDNESDAY, 18 APRIL 2007

SUBJECT WATER QUALITY TRENDS IN SOOKE RESERVOIR IN MARCH 2007

SUMMARY

The water quality tests conducted for Sooke Reservoir during March 2007 continued to show good quality water.

PURPOSE

This report provides information on the water quality conditions observed in Sooke Reservoir during the month of March 2007 and compares these data with those from previous years and long-term averages.

REPORT

Physical Parameters

*Water Levels***.** During the month of March, Sooke Reservoir remained at full pool and continued to spill (**Figure 1**). The total spillage from the reservoir as of March 30, 2007 was 13.45 billion gallons.

Water Temperature. During March, the weekly average temperature of the water entering the Japan Gulch Plant was slightly higher than the long term average for most of the month (**Figure 2**). By month end, the weekly temperature of the water entering the Japan Gulch Plant was about 7.4ºC, slightly warmer than the long term average.

Water Clarity

Turbidity. During March, the turbidity (cloudiness) of the surface water in Sooke Reservoir was slightly above the long term average in both the south and north basins (**Figure 3)**. Nevertheless, the water entering the treatment plant continued to be well below the turbidity limit listed for drinking water in the *Guidelines for Canadian Drinking Water Quality*. The turbidity levels in March were similar to the recent years following inundation.

Water Transparency. In March, the transparency of the water at the Intake Tower (as measured by observing a black and white disk under the water) improved from that observed in February (**Figure 4**). By month end, the water transparency was similar to the long-term pre-inundation average.

Bacteria

The total coliform bacteria concentration in the water entering the Japan Gulch Treatment Plant from Sooke Reservoir remained low throughout March. By month end, the total coliform level was about 20 colony forming units per 100 mL. This was similar to previous years and typical of winter conditions.

Nutrients

Phosphorus. During March, the total phosphorus concentrations averaged about 50% higher than the long-term, pre-inundation average in both the south (**Figure 5**) and north basins (**Figure 6**) of Sooke Reservoir. (**Note**: In the charts, the bars on each data point indicate the range of data observed from triplicate samples.) Over the longer term, the large quantity of water spilling from Sooke Reservoir should provide a benefit for water quality since it should act to flush the reservoir of higher nutrients.

Nitrogen. Similar to the previous month, total nitrogen levels in March were only slightly higher than the long-term pre-inundation average in both the south (**Figure 7**) and north basins (**Figure 8**) of Sooke Reservoir for the majority of the month. By month end, total nitrogen levels were slightly lower than those of recent years.

Chlorophyll-a

In March, chlorophyll-a concentrations (a general measure of algal populations) at the Intake Tower (**Figure 9**) and the north basin (**Figure 10**) in Sooke Reservoir remained low similar to pre-inundation levels, typical of the winter season.

Algae

In March, algal populations in Sooke Reservoir remained relatively low and continued to be indicative of lower winter algal populations.

Inundation Scientific Advisory Working Group

The Sooke Reservoir Inundation Scientific Advisory Working Group did not meet in March as very little of biological interest was happening in Sooke Reservoir. The next scheduled meeting is in May, 2007.

RECOMMENDATION

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

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Senior Manager, Water Quality

Figure 1. Water Level Elevation in Sooke Reservoir, 2003-2006

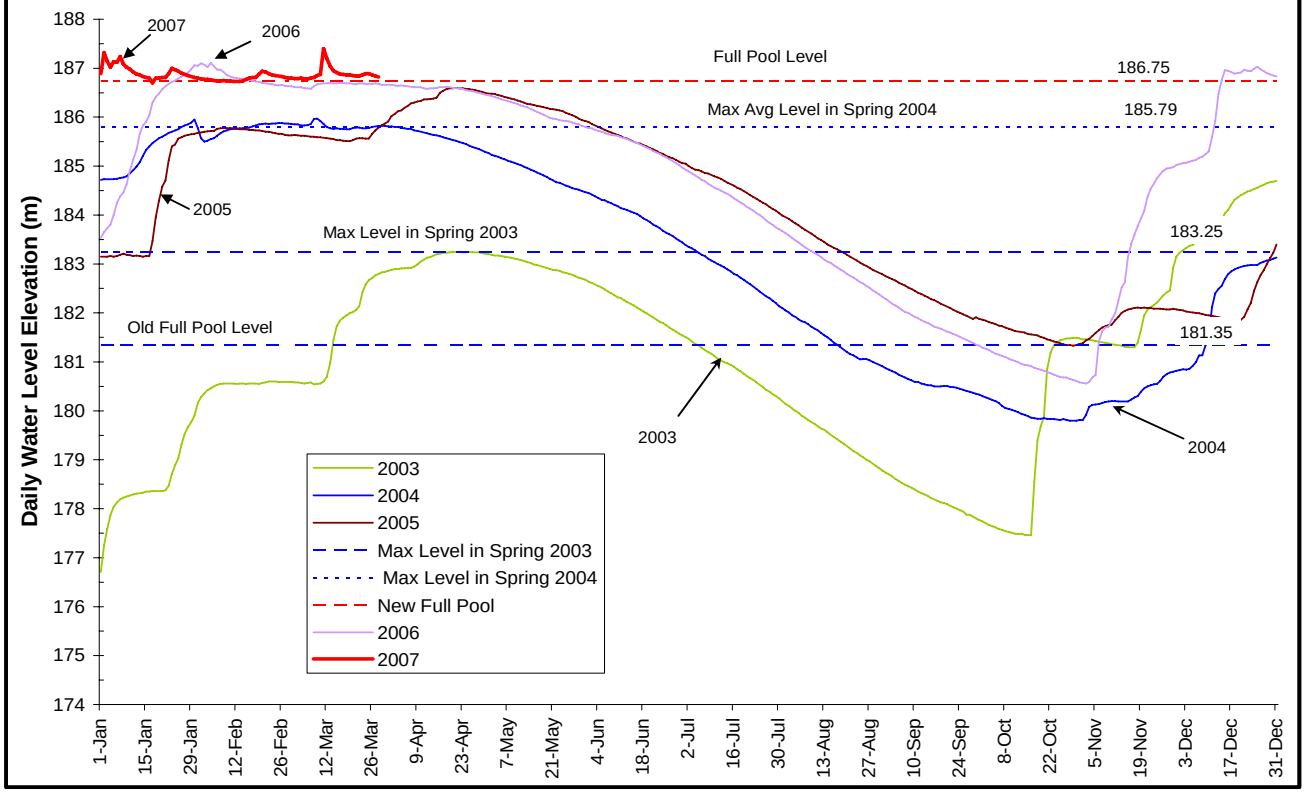

Figure 2. 2007 Temperature of Raw Water entering Japan Gulch Plant (Weekly Average)

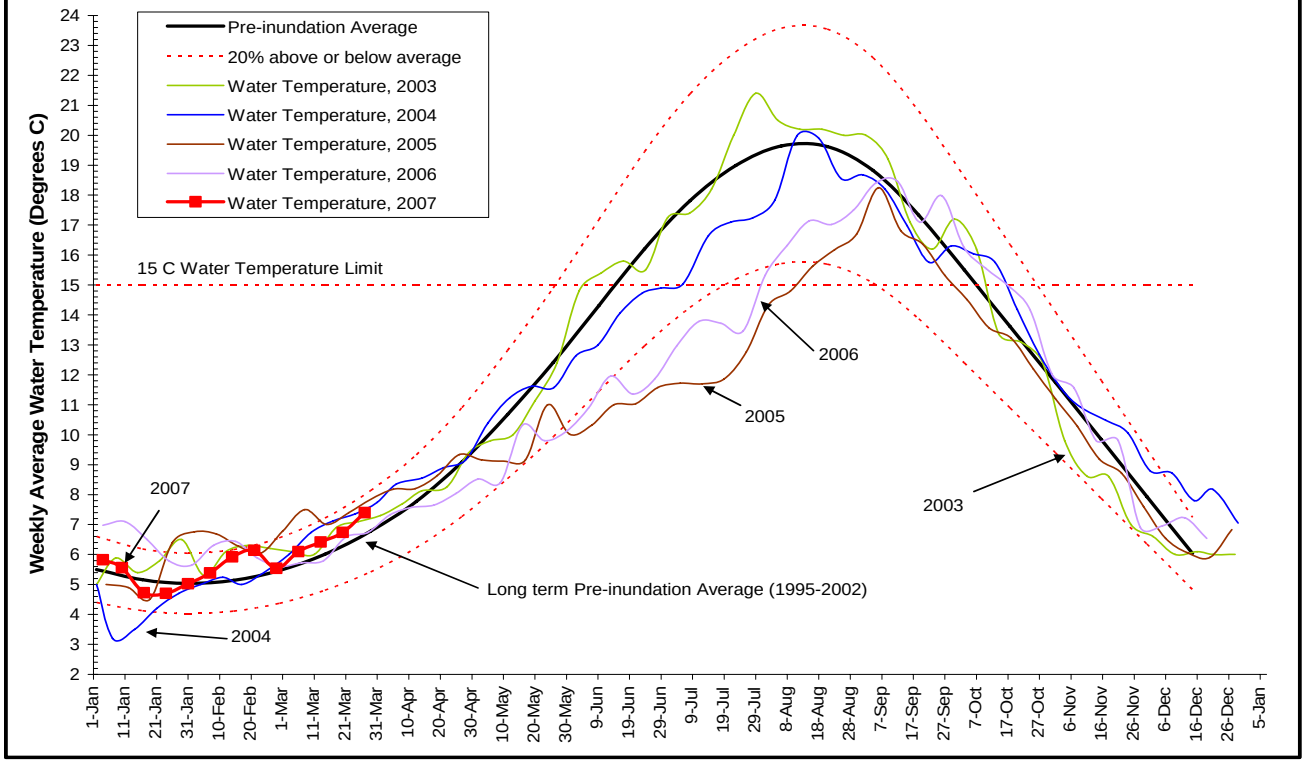

Figure 3. 2007 Turbidity in Sooke Reservoir
North Basin, 1m depth (SOL-04-01)

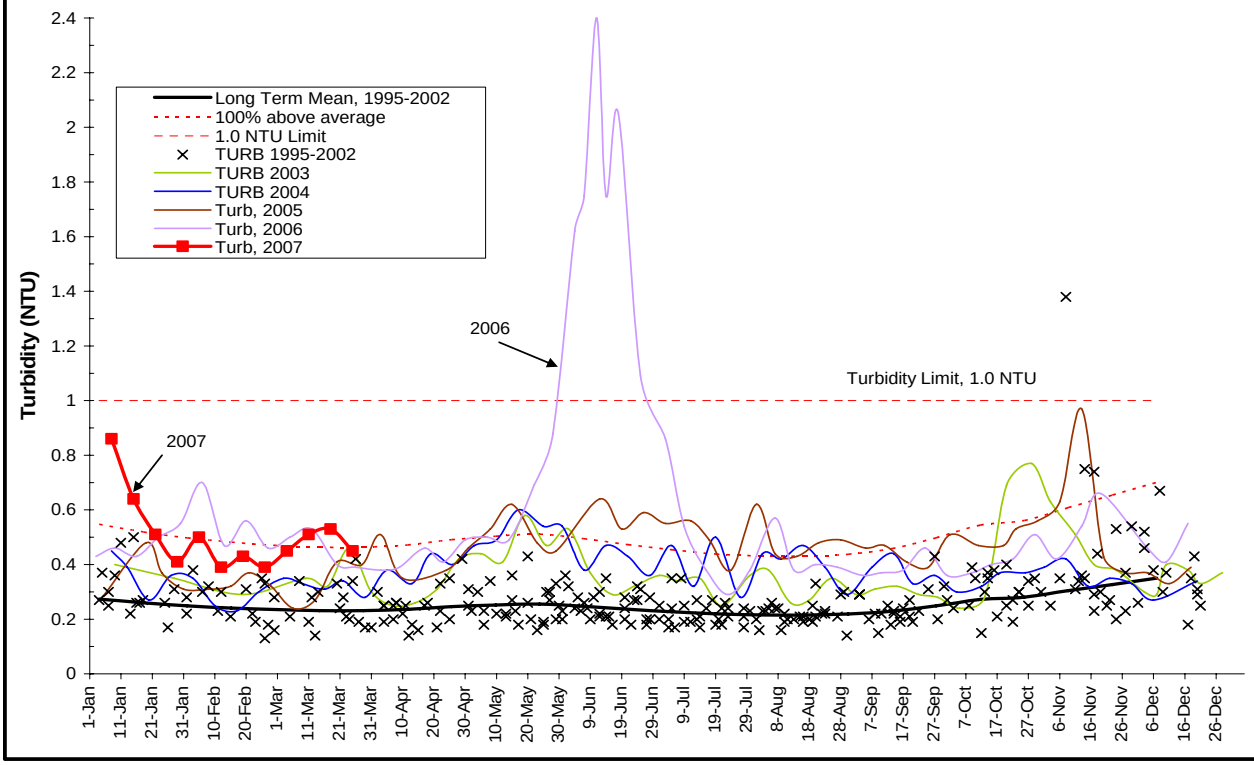

Figure 4. 2007 Water Transparency in Sooke Reservoir
Intake tower, (SOL-00-01)

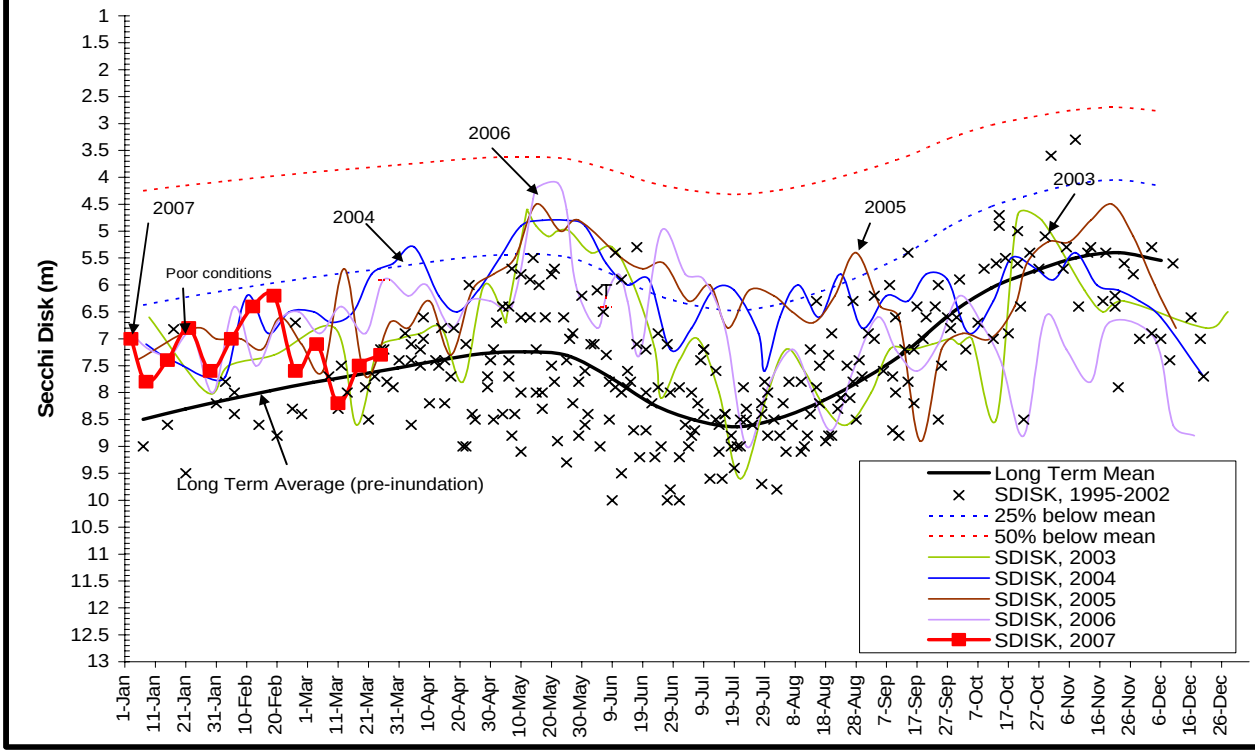

Figure 5. 2007 Total Phosphorus for Sooke Reservoir
South basin, 1 m depth (SOL-01-01)

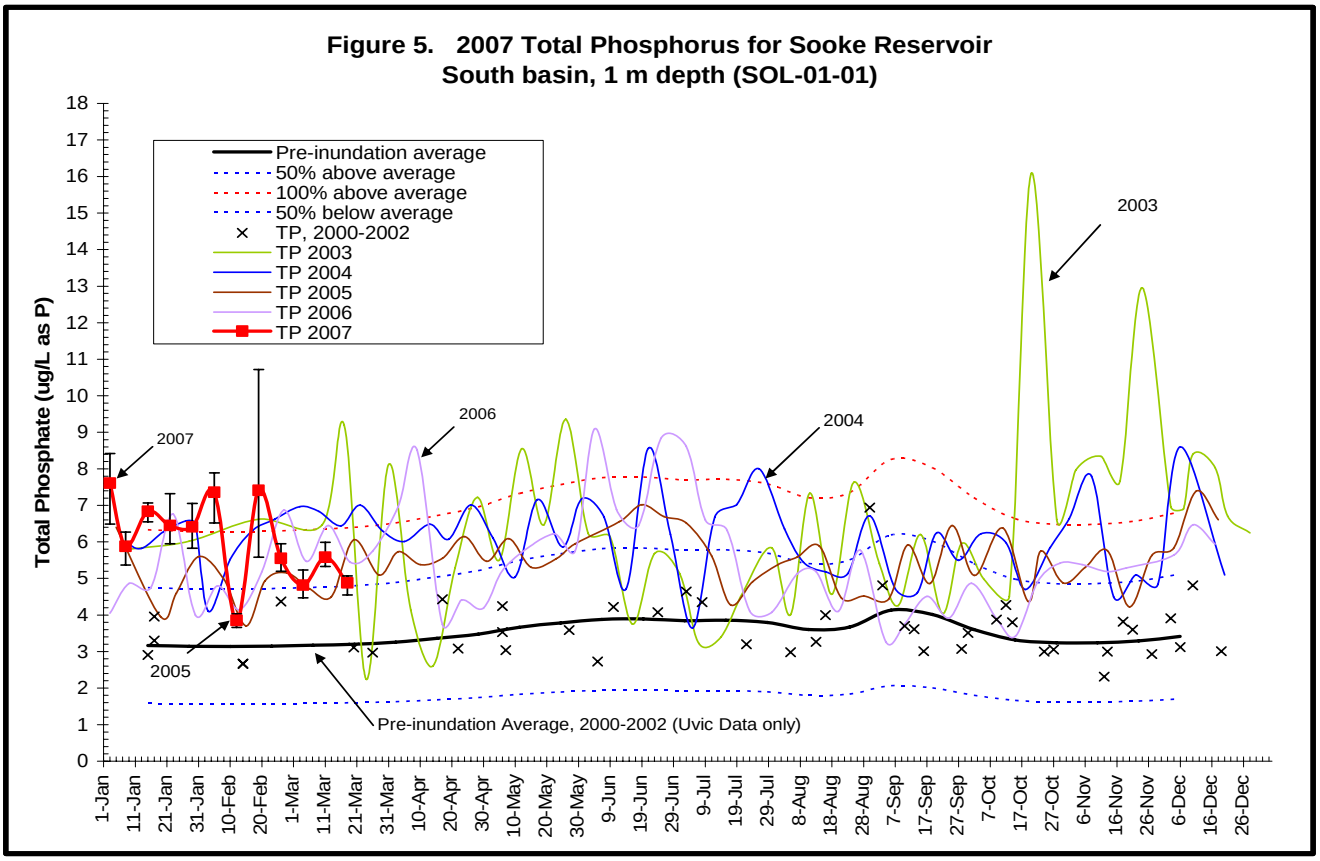

Figure 6. 2007 Total Phosphorus for Sooke Reservoir
North basin, 1m depth (SOL-04-01)

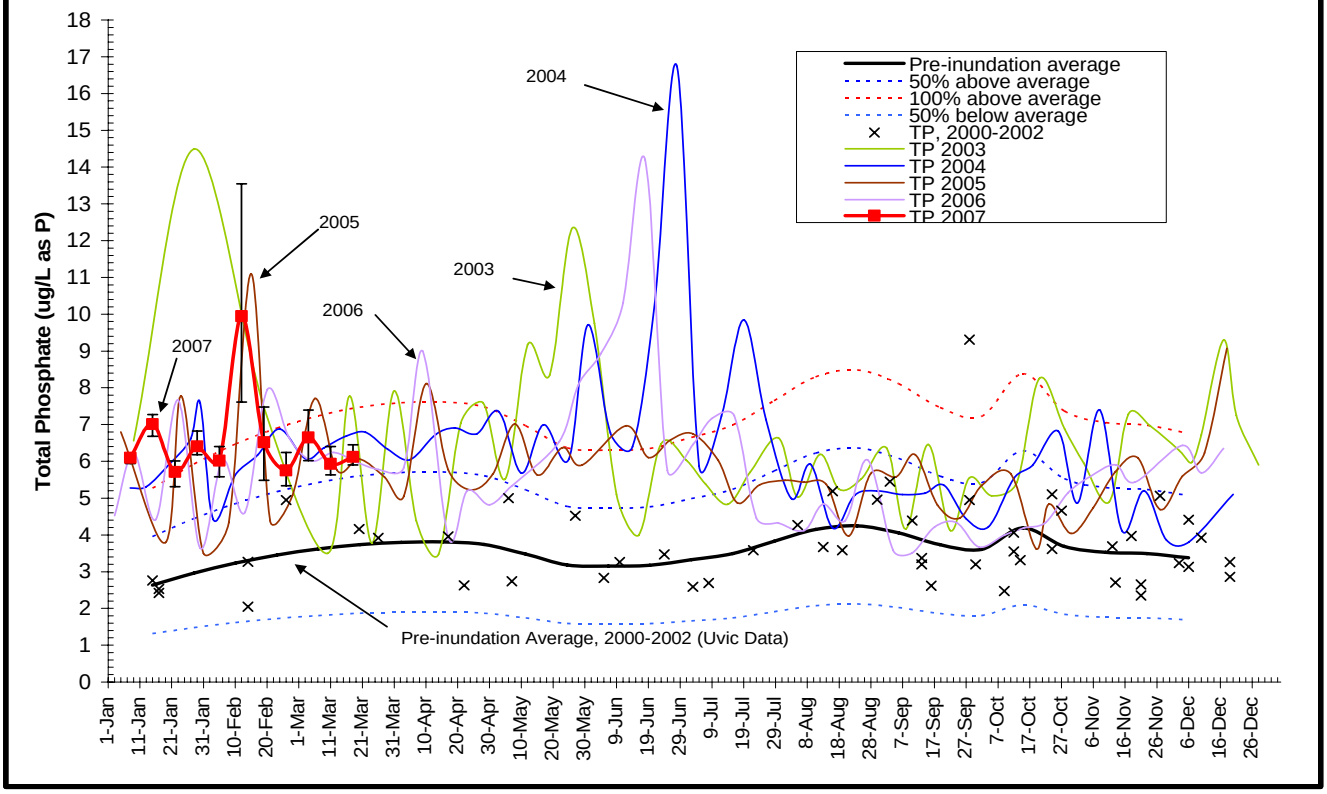

Figure 7. 2007 Total Nitrogen in Sooke Reservoir south basin, 1m depth (SOL-01-01)

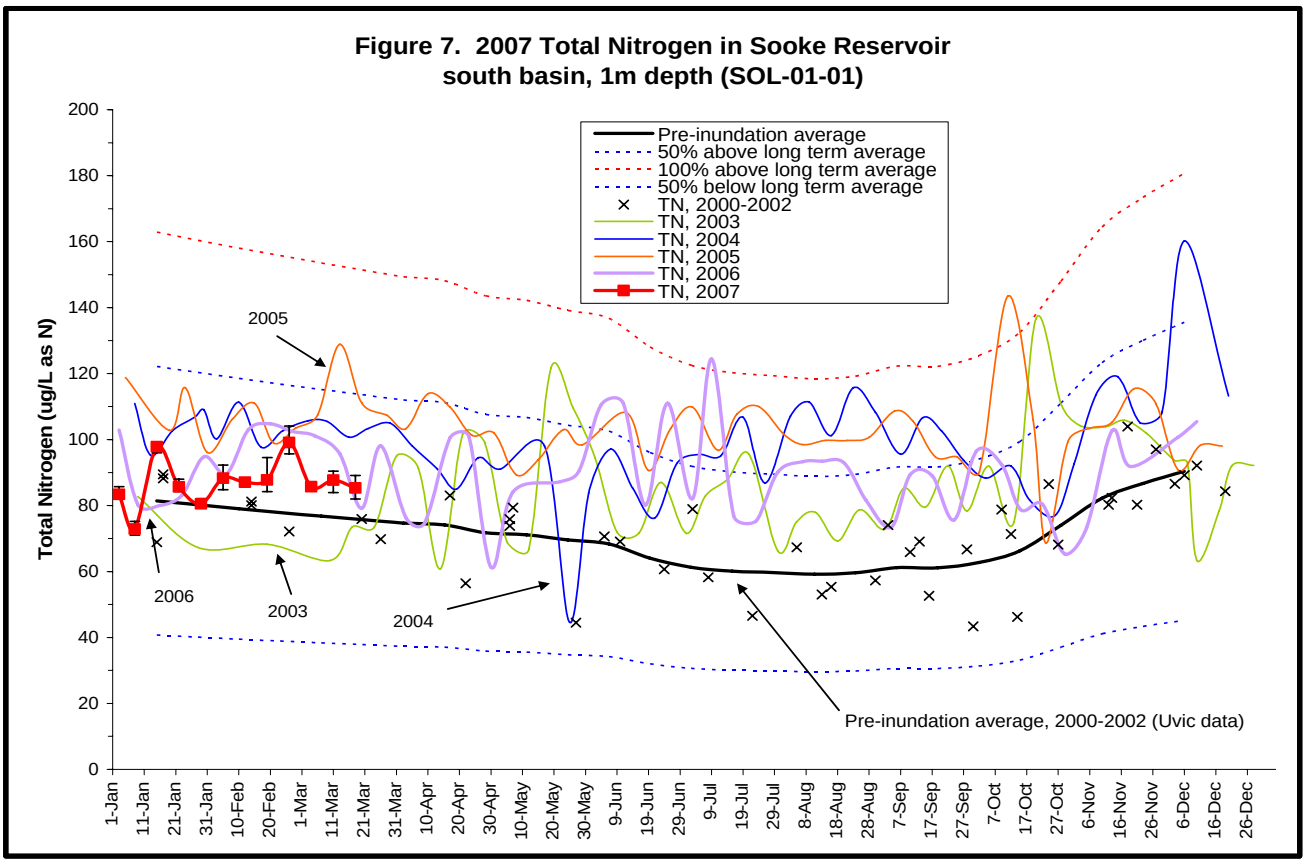

Figure 8. 2007 Total Nitrogen in Sooke Reservoir North basin, 1m depth (SOL-04-01)

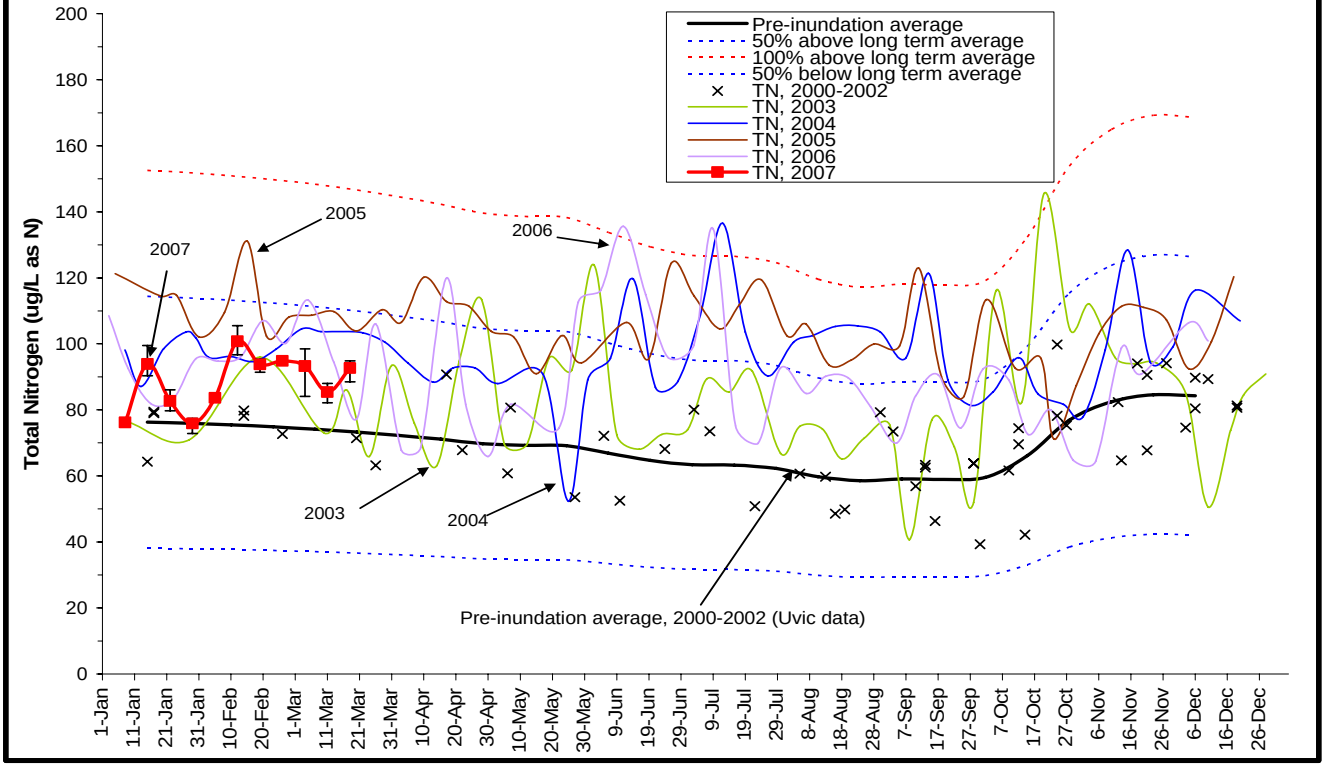

Figure 9. 2007 Chlorophyll-a in Sooke Reservoir
Intake Tower, 1 m depth (SOL-00-01)

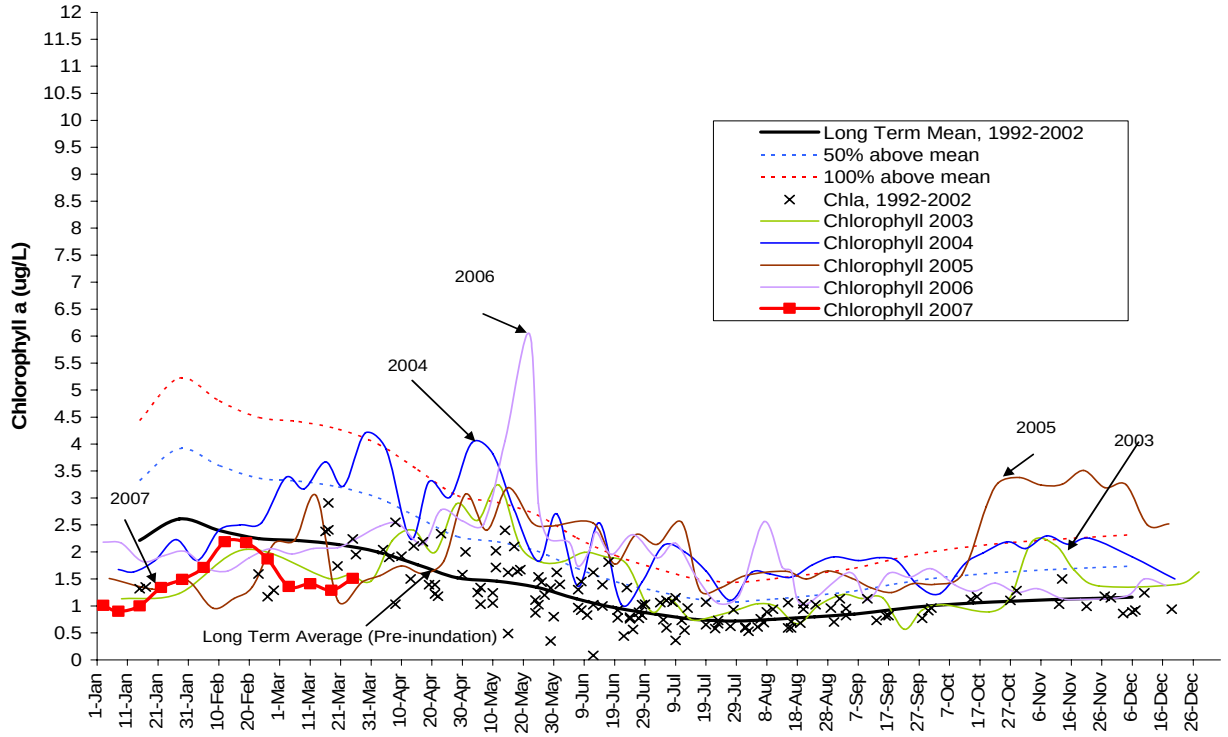

Figure 10. 2007 Chlorophyll-a in Sooke Reservoir
North Basin, 1 m depth (SOL-04-01)