CAPITAL REGIONAL DISTRICT

REPORT #RWSC 2007 - 08

INFORMATION REPORT TO REGIONAL WATER SUPPLY COMMISSION

SUBJECT WATER QUALITY TRENDS IN SOOKE RESERVOIR IN FEBRUARY 2007

SUMMARY

The water quality tests conducted for Sooke Reservoir during February 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 February 2007 and compares these data with those from previous years and long-term averages.

REPORT

Physical Parameters

*Water Levels***.** During the month of February, Sooke Reservoir remained at full pool and continued to spill (**Figure 1**). The total spillage from the reservoir as of February 28, 2007 was 9.9 billion gallons.

Water Temperature. During February, 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 5.5ºC, similar to the long term average.

Water Clarity

Turbidity. During February, 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 February were similar to recent years following inundation.

Water Transparency. Similar to the turbidity, the transparency of the water (as measured by observing a black and white disk under the water) in front of the intake tower of Sooke Reservoir declined slightly in February (**Figure 4**). However, by month end, it had improved to close to the long-term pre-inundation average at the Intake Tower

Bacteria

The total coliform bacteria concentration in the water entering the Japan Gulch Treatment Plant from Sooke Reservoir remained low throughout February. By month end, the total coliform level was about 50 colony forming units per 100 mL. This was similar to previous years and typical of winter conditions.

Nutrients

Phosphorus. During February, the total phosphorus concentrations fluctuated widely but averaged about 75% 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 early filling and spilling of Sooke Reservoir should provide a benefit for water quality since it should act to flush the reservoir of higher nutrients.

Nitrogen. Total nitrogen levels in February 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 rose to those of previous years.

Chlorophyll-a

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

Algae

In February, algal populations in Sooke Reservoir remained relatively low indicative of lower winter algal populations.

Inundation Scientific Advisory Working Group

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

RECOMMENDATION

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

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

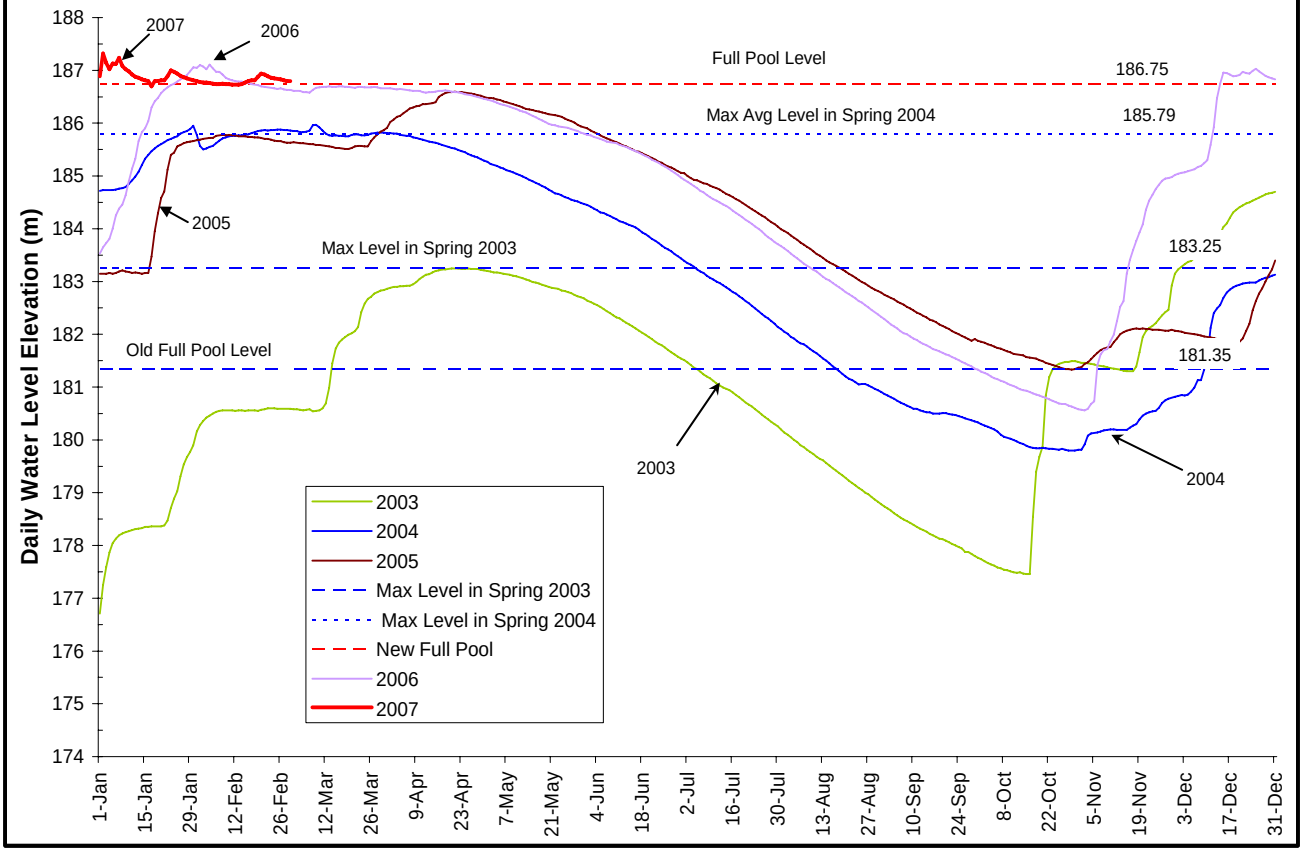

Figure 2. 2007 Temperature of Raw Water entering Japan Gulch Plant (Weekly Average)

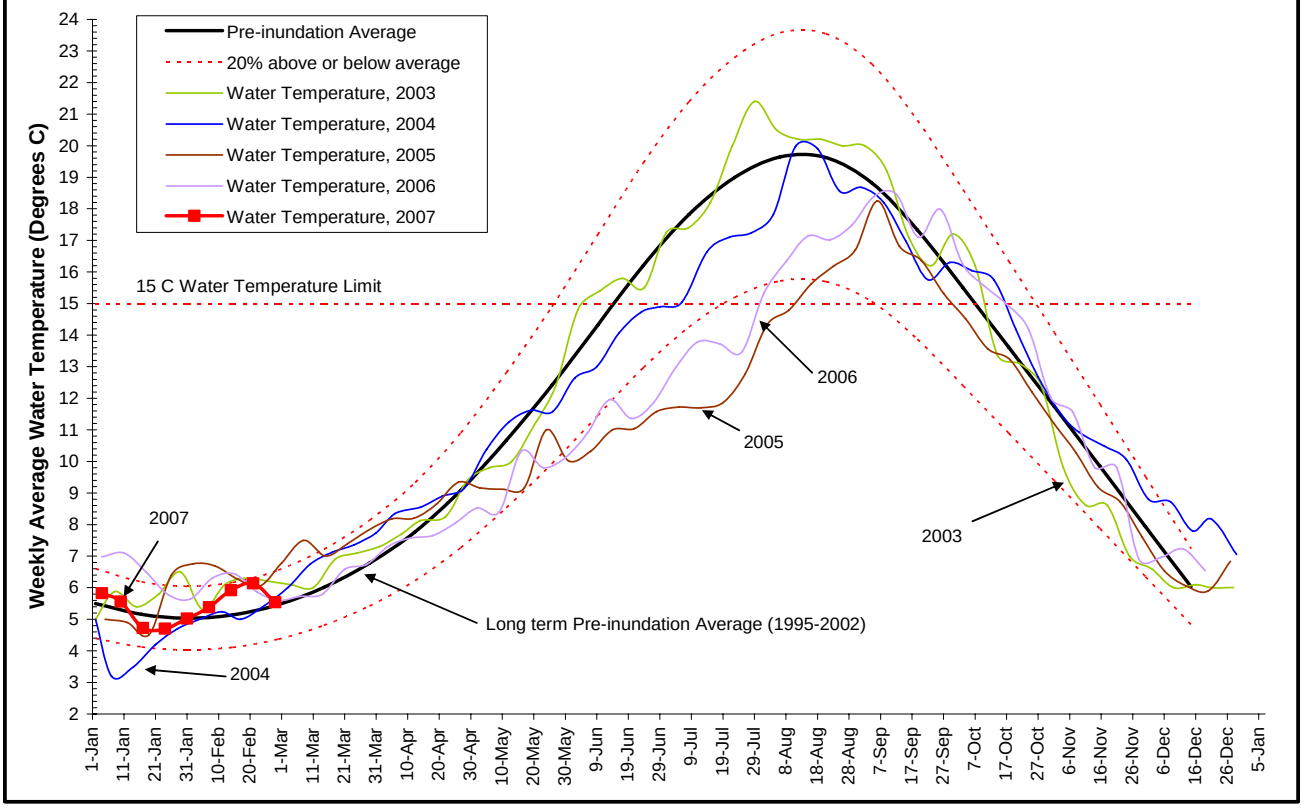

Figure 3. 2007 Turbidity in Sooke Reservoir
North Basin, 1m depth (SOL-04-01)

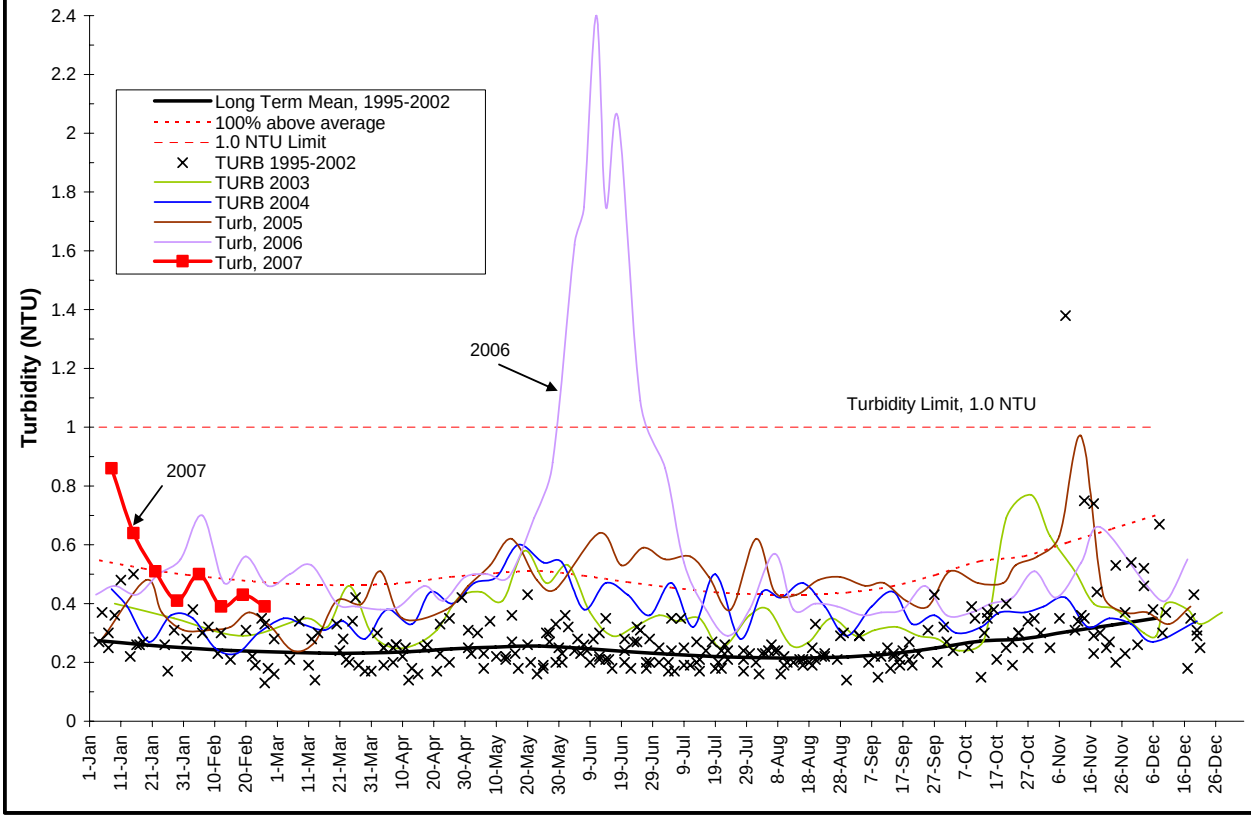

Figure 4. 2007 Water Transparency in Sooke Reservoir
Intake tower, (SOL-00-01)

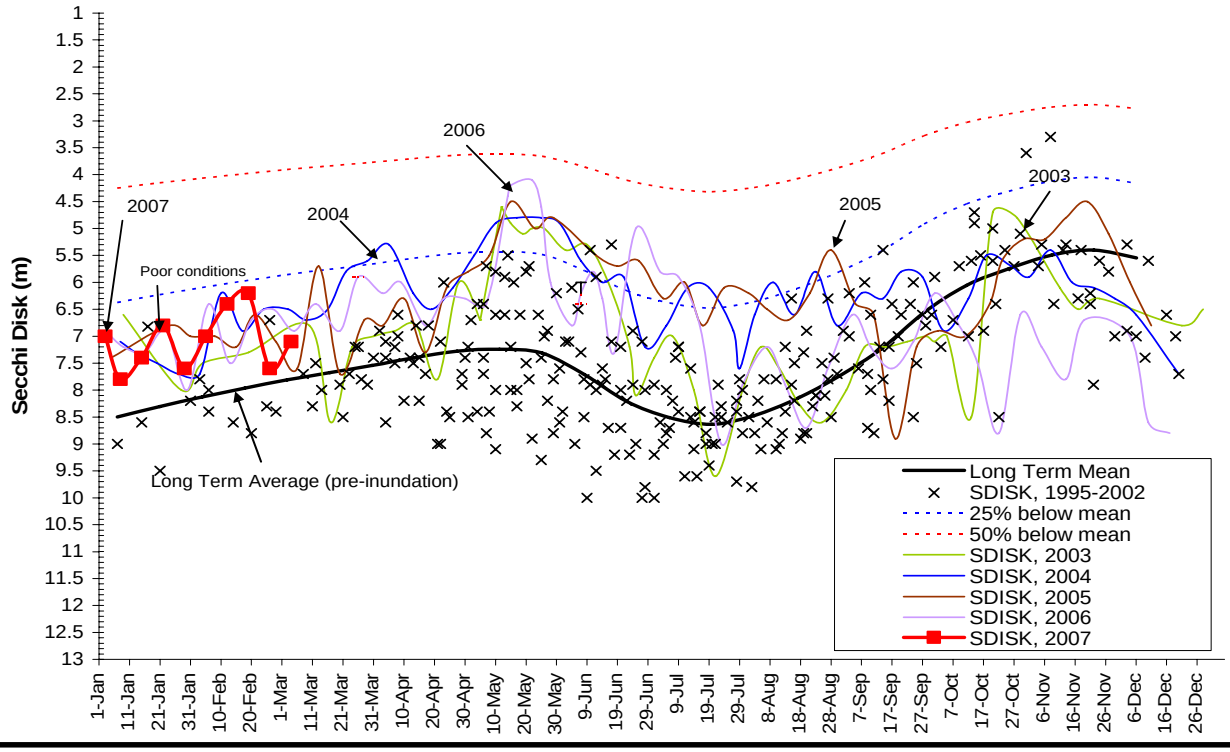

Figure 5. 2007 Total Phosphorus for Sooke Reservoir
South basin, 1 m depth (SOL-01-01)

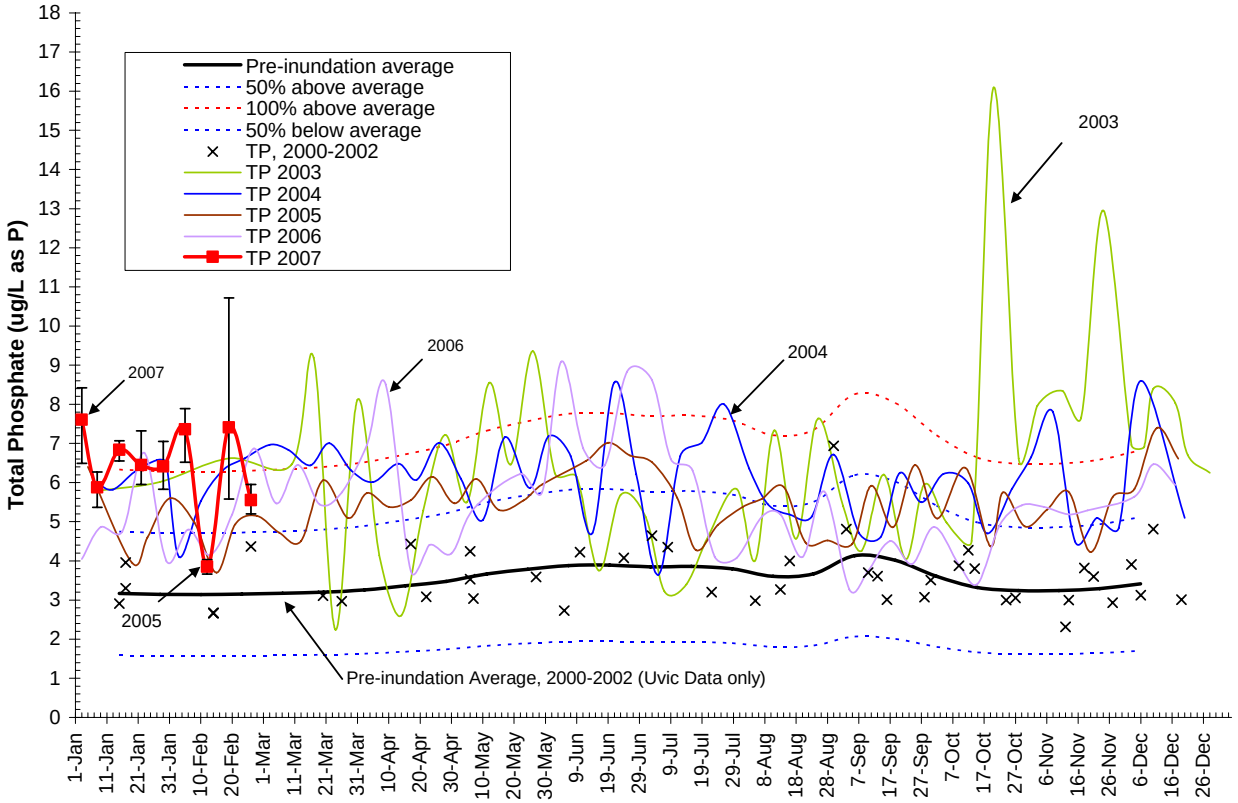

Figure 6. 2007 Total Phosphorus for Sooke Reservoir
North basin, 1m depth (SOL-04-01)

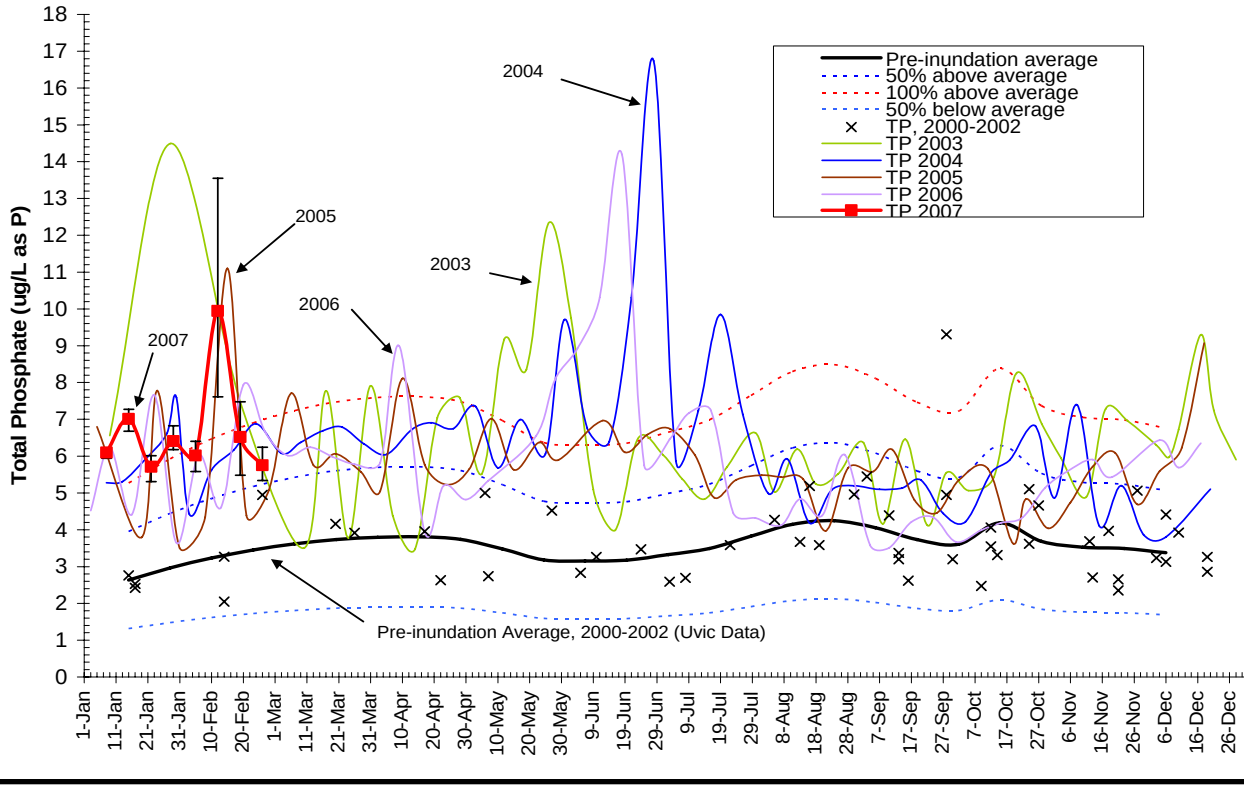

Figure 7. 2007 Total Nitrogen in Sooke Reservoir south basin, 1m depth (SOL-01-01)

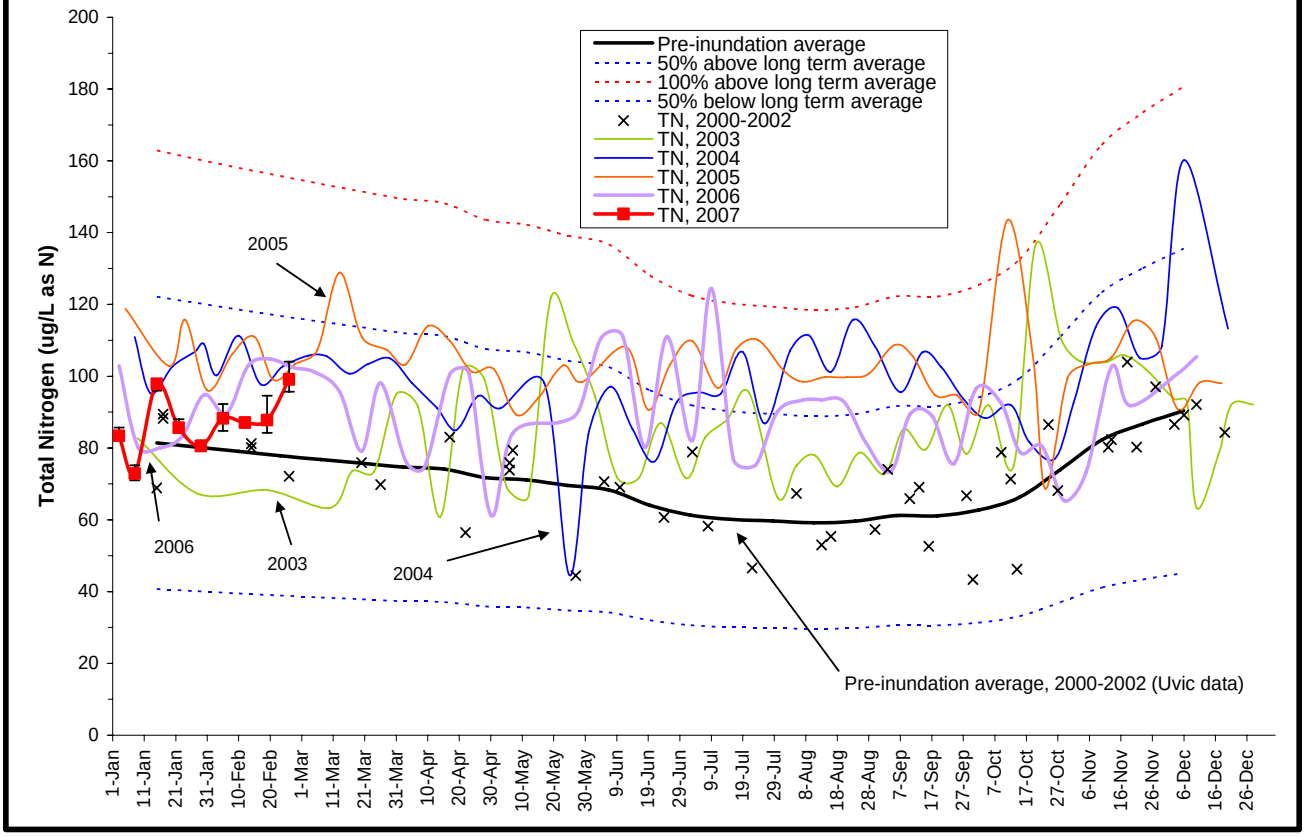

Figure 8. 2007 Total Nitrogen in Sooke Reservoir North basin, 1m depth (SOL-04-01)

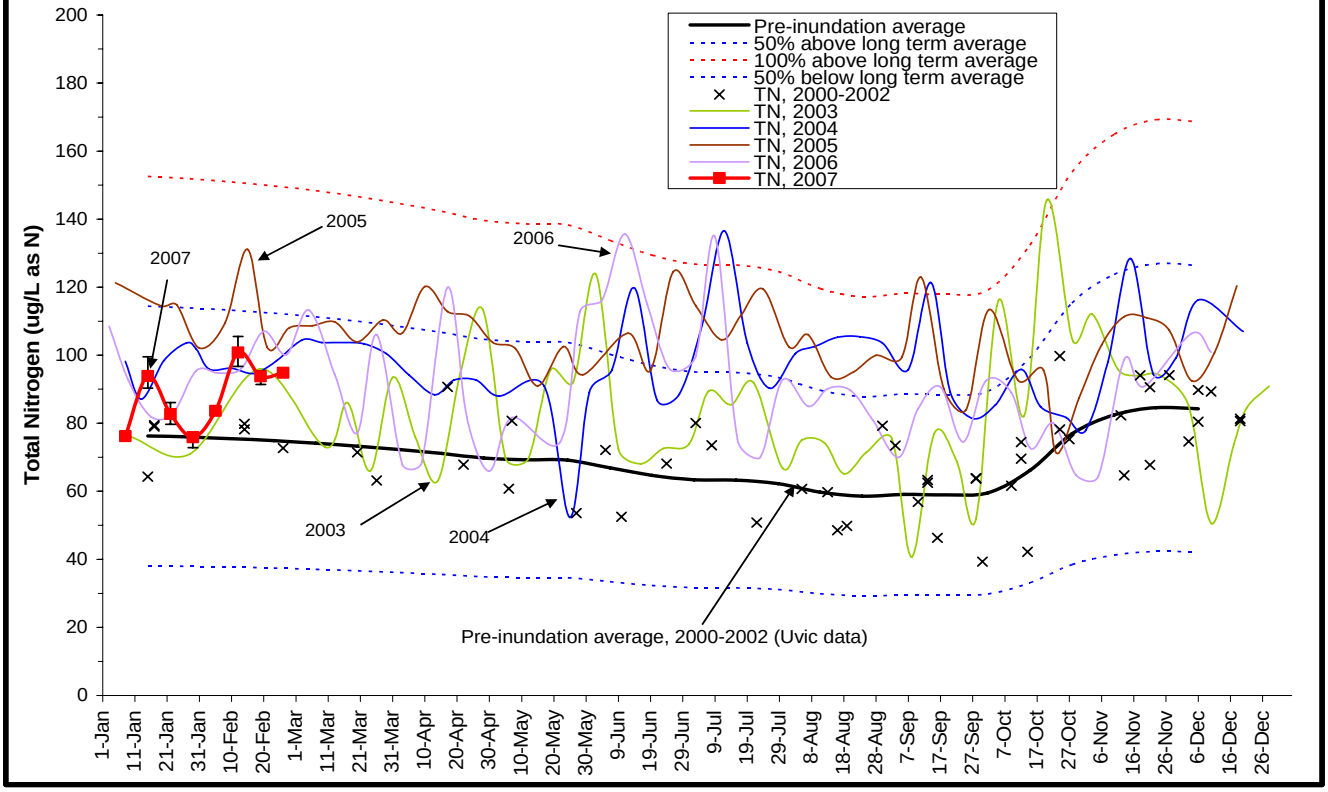

Figure 9. 2007 Chlorophyll-a in Sooke Reservoir
Intake Tower, 1 m depth (SOL-00-01)

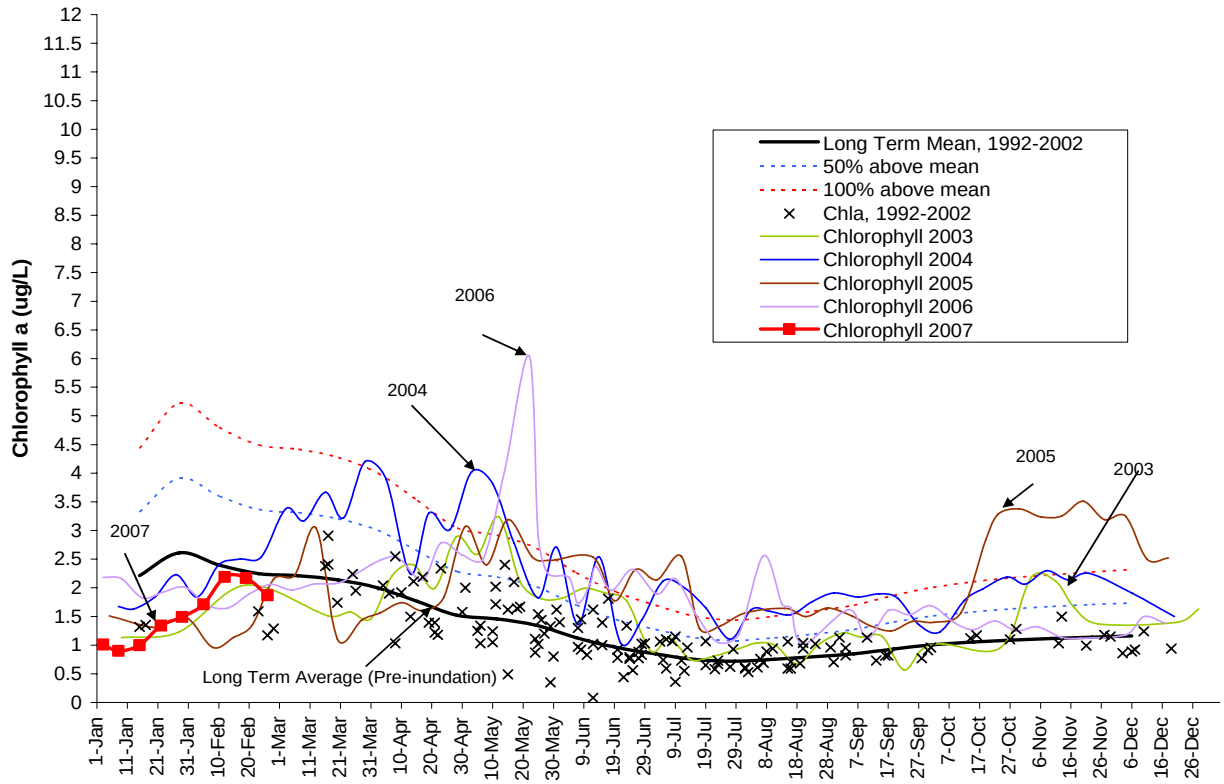

Figure 10. 2007 Chlorophyll-a in Sooke Reservoir
North Basin, 1 m depth (SOL-04-01)