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**REPORT TO REGIONAL WATER SUPPLY COMMISSION
MEETING OF WEDNESDAY, 18 NOVEMBER 2009**

SUBJECT WATER QUALITY TRENDS IN SOOKE RESERVOIR IN OCTOBER 2009

SUMMARY

The water quality tests conducted for Sooke Reservoir in October 2009 continued to show good quality source water with no water quality issues.

PURPOSE

This report provides information on the water quality conditions observed in Sooke Reservoir during October 2009 and compares these data with those from previous years and long-term averages.

REPORT

Physical Parameters

Water Levels. In October 2009, the water level in Sooke Reservoir declined gradually and fell by 0.2 metres (**Figure 1**). At the end of October, Sooke Reservoir was 6.57 m below the full pool level and 1.17 m below the old full pool level. Similar to the last few months, the general pattern of this decline in water level closely follows the drop experienced in 2004 when Sooke Reservoir also did not fill in the previous winter. (**Note:** The 2004 data was added to **Figure 1** to provide this comparison).

Water Temperature. In October, the weekly average temperature of the water entering the Japan Gulch Treatment Plant was similar to both the post-inundation and pre-inundation average temperatures for the same time period. During October, the water temperature averaged 13.7°C and dropped below the 15°C temperature limit early in the month (**Figure 2**).

Water Clarity

Turbidity. During October, the turbidity of the water in Sooke Reservoir averaged 0.50 NTU in front of the intake, 0.51 NTU in the south basin (**Figure 3**) and 0.42 NTU in the north basin. These readings were higher (slightly worse) than the long term post-inundation average but for the most part, slightly lower (better) than the pre-inundation (1995-2002) average.

Water Transparency. During October 2009, similar to the past few months, the transparency of the water in front of the intake was, on average, better than both the long-term, pre-inundation average and the post-inundation average (2003-2007) (**Figure 4**). In the south basin, the water transparency was similar to the long-term average and better than the post-inundation (2003-2007) average. In the north basin, the water transparency was better than the same period in 2008 and better than the post-inundation (2003-2007) average albeit slightly poorer than the pre-inundation average.

Bacteria

Total Coliform Bacteria. During October, the total coliform concentrations in the raw source water entering the Japan Gulch Treatment Plant from Sooke Reservoir remained relatively low. This was similar to 2008 and below the post-inundation average for the same period (**Figure 5**). In addition, the *E. coli* concentrations were very low and indicative of good bacterial quality for a source water reservoir (see **insert in Figure 5**).

Nutrients

Phosphorus. During October 2009, the total phosphorus concentrations in the south basin were slightly higher than the long term pre-inundation averages but lower than the post-inundation averages (**Figure 6**). In the north basin, the total phosphorus concentrations remained lower than both the long term pre-inundation averages and the post-inundation averages (**Figure 7**). (**Note:** In the charts, the bars on each data point indicate the range of data observed from triplicate samples).

Nitrogen. The total nitrogen levels in both the south and north basins were on average, slightly higher than the long term pre-inundation averages but lower than the post-inundation averages (**Figures 8 and 9**).

Chlorophyll-a

Chlorophyll-a concentrations were generally slightly above the lower pre-inundation average throughout Sooke Reservoir in October, hovering below the higher post-inundation average (**Figures 10-12**). The relatively low chlorophyll levels throughout the reservoir indicate that there was no particular problem with algal concentrations.

Algae

There were no significant algal blooms during October 2009.

Inundation Scientific Advisory Working Group

The Sooke Reservoir Inundation Scientific Advisory Working Group last met on May 6th, 2009. There were no meetings during June through October as the reservoir ecology was relatively quiet.

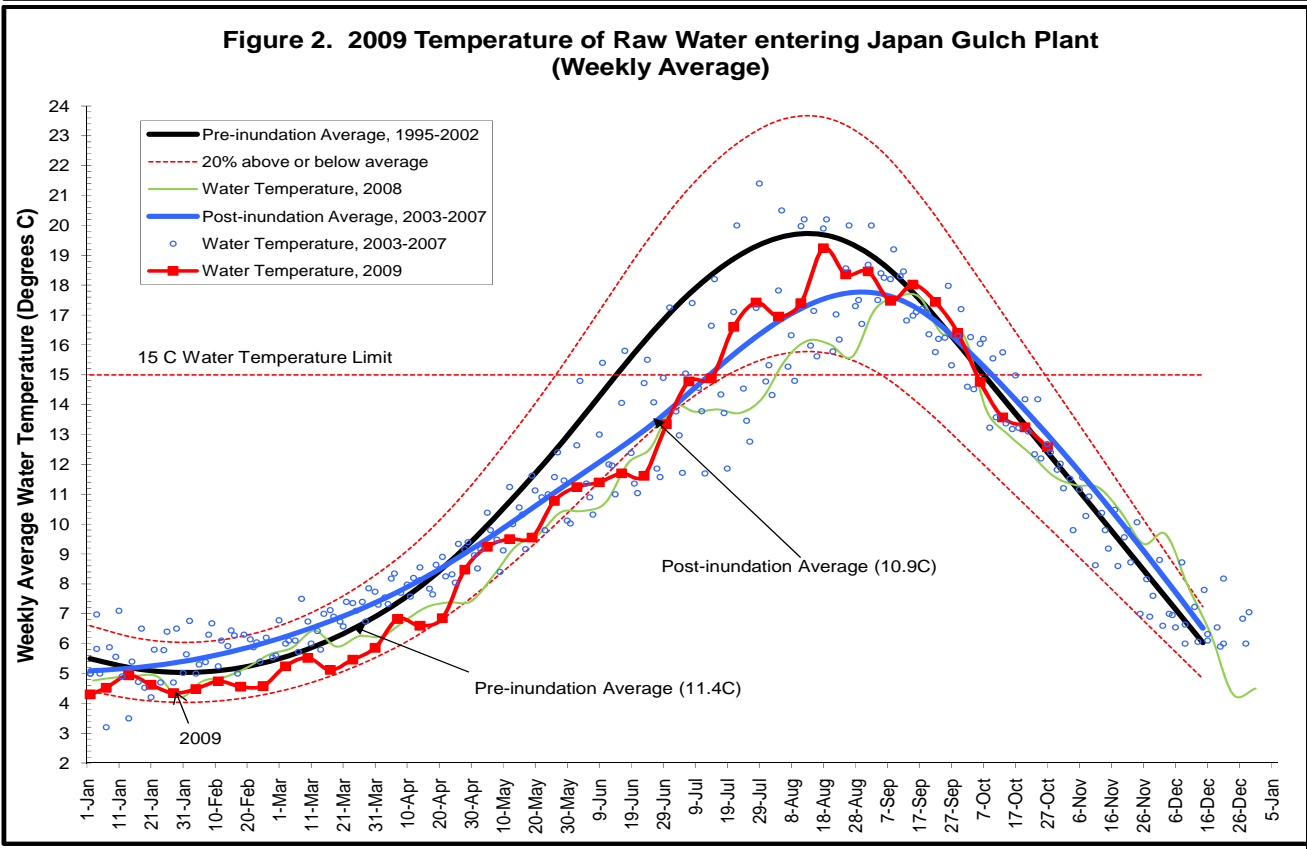
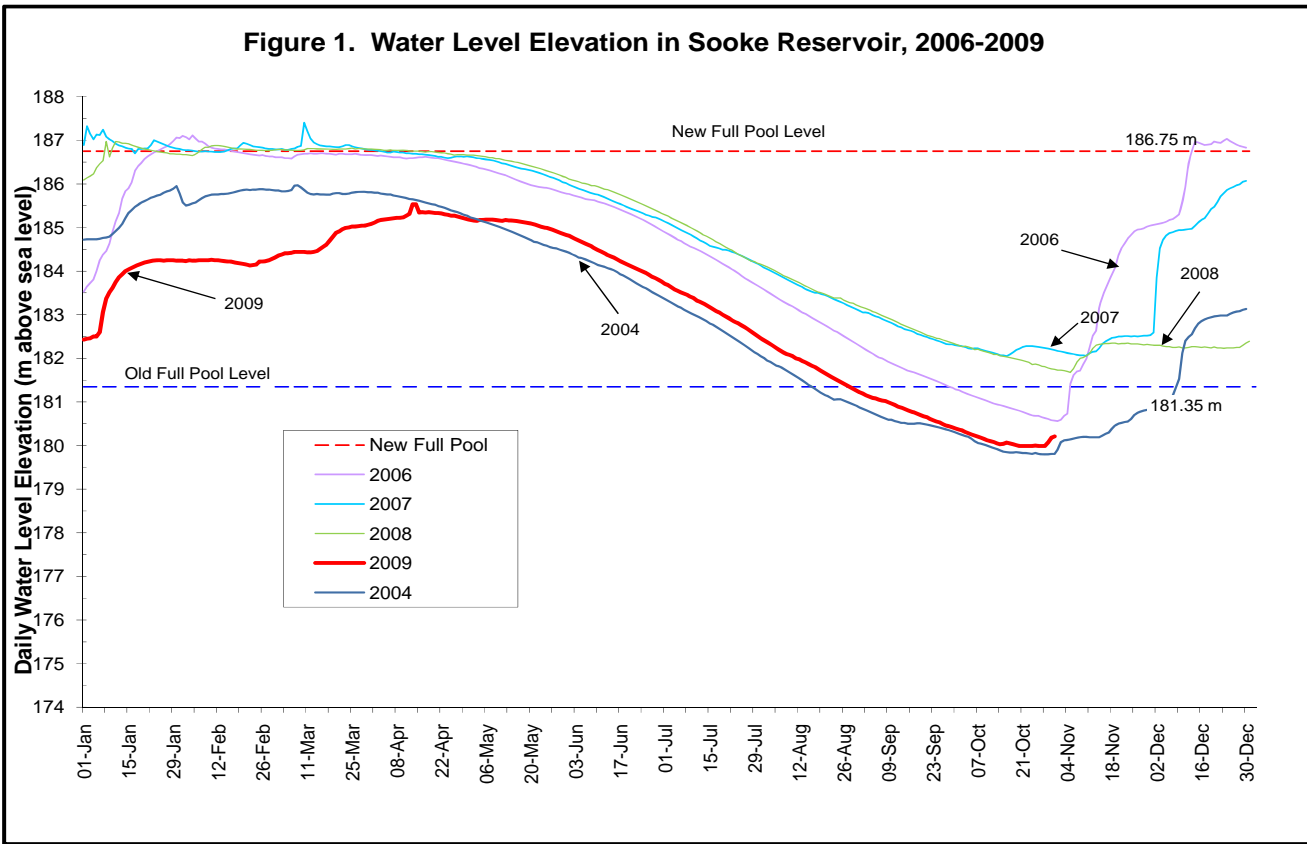
RECOMMENDATION

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

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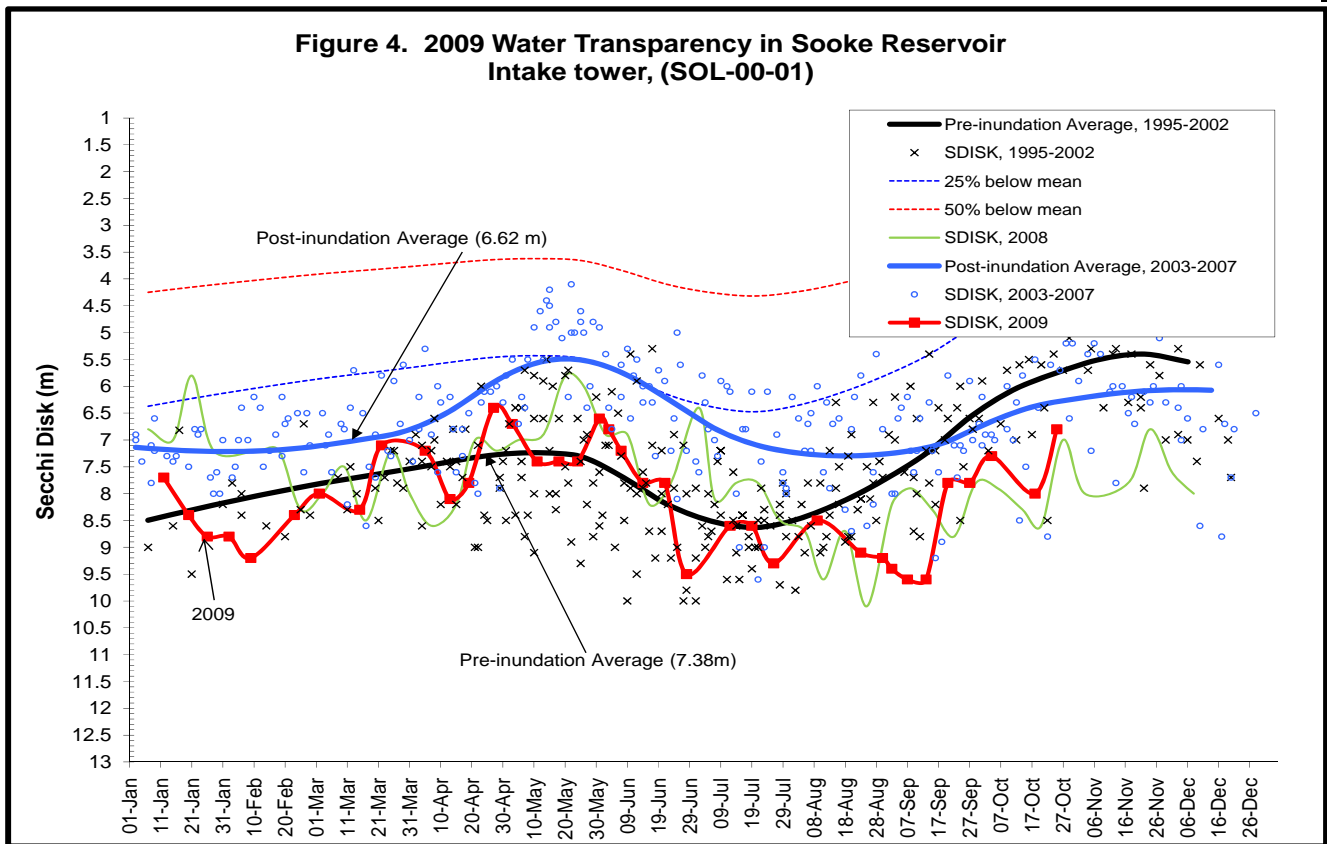
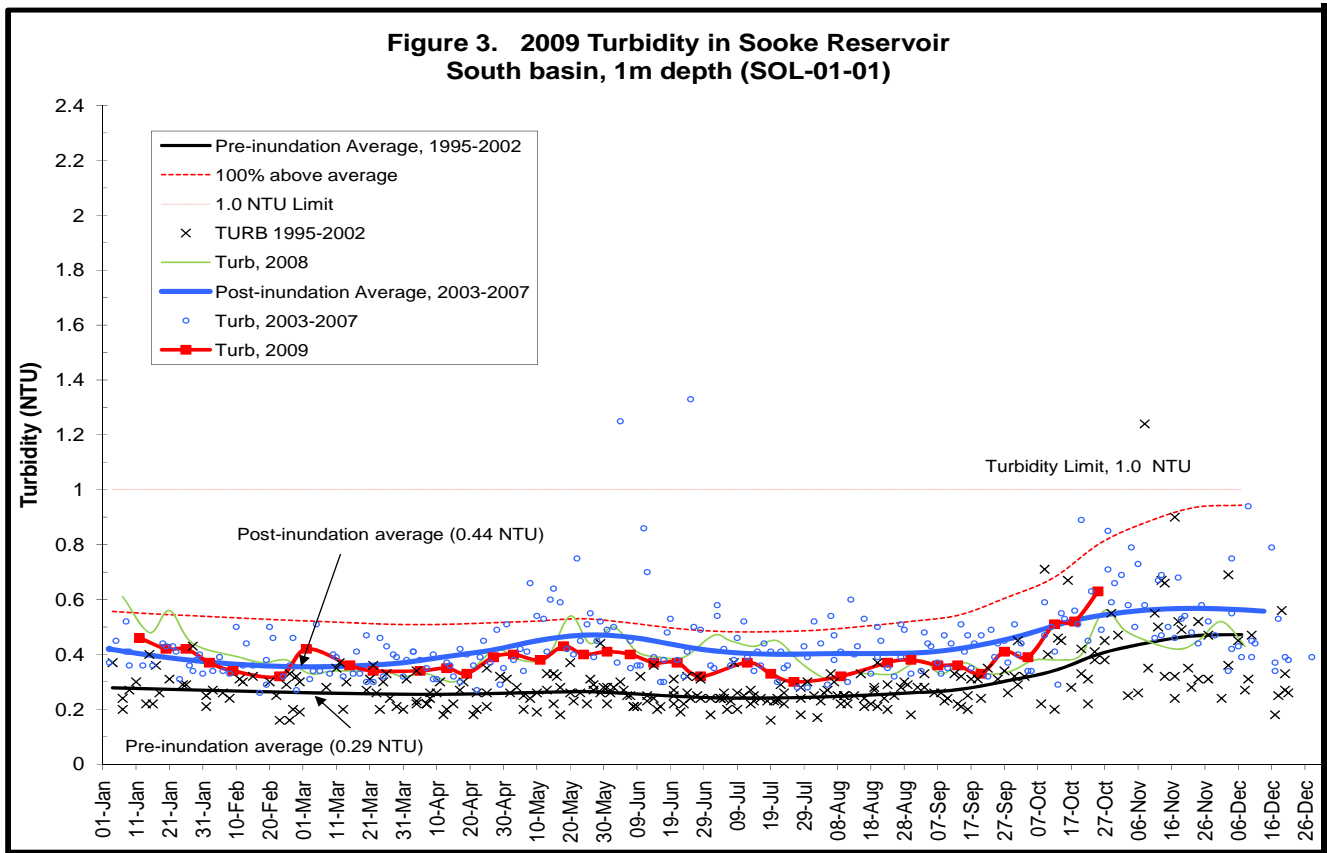


Figure 5. Total Coliforms in Raw Water Entering Japan Gulch Plant, 2004-2009

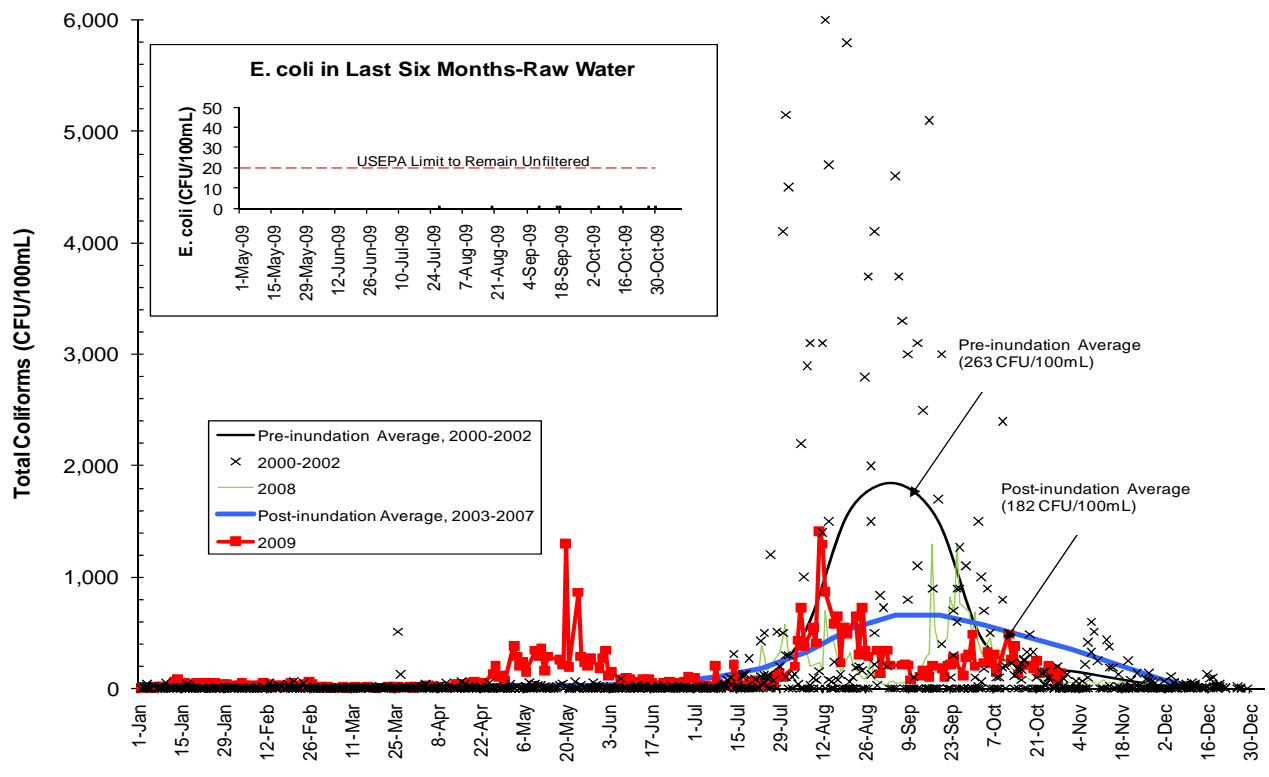


Figure 6. 2009 Total Phosphorus for Sooke Reservoir South basin, 1 m depth (SOL-01-01)

