

# Attainment of Water Quality Objectives for the Smithers Lakes (Kathlyn, Seymour, Tyhee and Round Lakes)

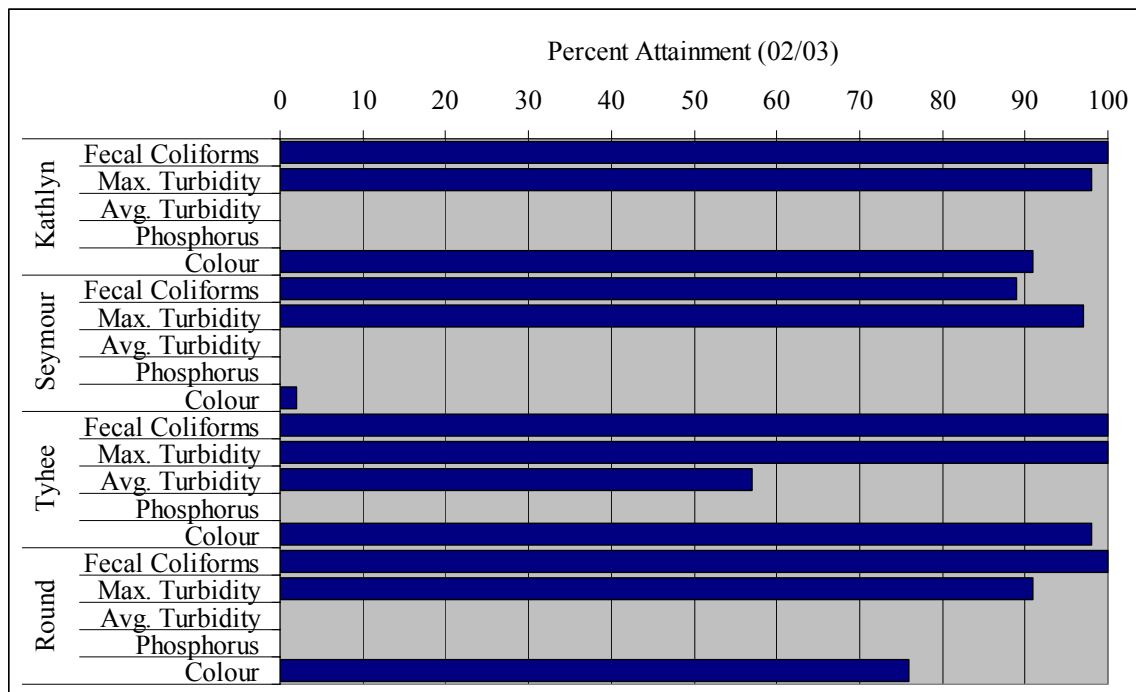
## Second Update (2002/03)

### EXECUTIVE SUMMARY

Designated water uses for the Smithers Lakes (Kathlyn, Seymour, Tyhee and Round Lakes) include drinking, recreation, aquatic and wildlife, irrigation, livestock and industrial use. Water quality objectives have been set to protect the lakes for drinking water purposes. This report summarizes water quality objectives, levels of attainment in 2001 and 2002/03, and provides recommendations for updating the objectives.

Monitoring completed in 2001 and 2002/03 revealed that fecal coliforms and maximum turbidity objectives were met most of the time; however, average turbidity, phosphorus and colour objectives were frequently not met (Figure 1).

**Figure 1: Attainment of Each Objective in 2002/03 at Kathlyn, Seymour, Tyhee and Round Lakes**



Canadian Council of Ministers of the Environment (CCME) Water Quality Index (WQI) values were calculated for each lake to describe the current state of water quality.

Attainment percentages and index values are summarized in Table 1. Seymour Lake calculations are performed both *with* and *without* the colour objective.

**Table 1: 2001 and 2002/03 Objectives Attainment and 2002/03 WQI**

Water Body	2001 Attainment	2002/03 Attainment	2002/03 WQI Index Value	2002/03 WQI Rating
Kathlyn	86%	86%	39	Poor
Seymour (with colour)	39%	40%	12	Poor
Seymour (without colour)	62%	67%	17	Poor
Tyhee	86%	95%	55	Marginal
Round	72%	78%	26	Poor

Overall, sampling results indicate that periodic water quality concerns exist at the Smithers Lakes and the designated uses are not always protected. Domestic water users should be warned that fecal coliform and maximum turbidity objectives are occasionally exceeded, indicating that disinfection alone may not be sufficient to ensure that the water is safe for drinking.

Two additional water quality objectives are proposed to evaluate microbiological water quality in the Smithers Lakes: (1) The concentration of *E. coli* in the Smithers Lakes should not exceed 10 CFU/100mL in 90% of the samples at drinking water intakes, and the geometric mean should not exceed 77 CFU/100mL in samples from recreational beaches; and (2) The concentration of *Enterococci* in the Smithers Lakes should not exceed 3 CFU/100mL in 90% of the samples at drinking water intakes, and the geometric mean should not exceed 20 CFU/100mL in samples from recreational beaches. Consistently meeting these objectives indicates that no water treatment in addition to disinfection is required to protect drinking water supplies from bacteria, and that the risk of bacteria-caused gastrointestinal disease through primary-contact recreation at beaches is minimized. Meeting these objectives does not ensure protection from other contaminants such as blue-green algal toxins; treatment beyond disinfection may still be required for these contaminants.

In addition, it is recommended that the water quality objective for colour be eliminated for Seymour Lake only, and that consideration be given to revising the phosphorus objective for all lakes when sufficient data is available.