

**Burrard Inlet 2002**  
**WATER QUALITY OBJECTIVES ATTAINMENT**  
**REPORT SUMMARY**  
**Ministry of Water, Land and Air Protection,**  
**Environmental Quality Section**

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This report presents the results of monitoring undertaken in 2002 to check the attainment of Burrard Inlet water quality objectives that were set in 1990. Comprehensive water quality monitoring in Burrard Inlet was last conducted by the Ministry in 1993 and 1994.

**Why Monitor Water Quality?**

Water quality information guides people in their decisions on how to use water and promotes action to correct problems. Fish and other aquatic life are dependent upon good water quality. Human health also depends upon clean water for drinking and irrigation. In addition, commercial, recreational and even cultural water uses can also depend upon water quality conditions.

Certain water quality parameters measured are associated with specific land uses. For example, bacteriological parameters such as fecal coliforms, or nutrients such as ammonia nitrogen, are used as indicators of agricultural waste or sewage presence (potentially from leaking septic tile systems, or urban stormwater). Elevated levels of suspended sediments in a watercourse may reflect land disturbance, such as from forestry or agriculture, while polycyclic aromatic hydrocarbons (PAHs) and heavy metals may be indicative of stormwater runoff from urban streets.

Water quality measurements are compared to known standards such as Provincial Water Quality Guidelines or watershed specific objectives, both of which are safe limits set by the Ministry for various uses.



False Creek and downtown Vancouver from Science World.

**What was Monitored?**

In October and November 2002, water chemistry samples were collected at 11 sites in Burrard Inlet. Water samples were analyzed for: *pH, ammonia, non-filterable residue*, and the bacteriological indicators, *fecal coliforms and enterococci*. Field measurements taken at each site included: *water temperature, salinity and dissolved oxygen*. Sediment samples were collected at all but the False Creek sites, and were analyzed for: *trace metals, polychlorinated biphenyls (PCBs), polycyclic aromatic hydrocarbons (PAHs) and chlorinated phenols*. English sole were collected in January and February 2003, at 9 sites and tissue was analyzed for *lead, mercury and PCBs*.



Harbour Seals near Port Moody Arm.

### What were the Results?

Water Quality Objectives were not met for:

- Enterococci at five of eight sites where the objective applies (samples were collected in 50 days rather than the recommended 30 days).
- Dissolved oxygen at many sites on many dates (22% non-attainment in surface water; 89% non-attainment in deeper water). These conditions appear worse as the exceedances are now more widespread in the inlet than in 1993 and 1994.
- Suspended solids at Shellburn on one date which is similar to the 1994 results.
- Copper in the water column at False Creek West and Coal Harbour (once at each site). This data is similar to 1993 and 1994 when the copper objective was exceeded at times.
- Cadmium, copper, lead, mercury and zinc in sediments at some sites. Sites in the inner harbour had the greatest number of sediment quality objective exceedances. Cadmium, copper, lead and zinc also exceeded sediment objectives in both 1993 and 1994.

- PAHs (total high molecular weight as well as individual PAHs) in the inner harbour and Port Moody Arm. Many PAHs also exceeded objectives in 1993 and 1994.
- PCBs in sediment at Coal Harbour and Pacific Coast Terminals. PCBs also exceeded the sediment objective at sites in 1993 and 1994.

There was insufficient data from the 2002 monitoring to calculate a Water Quality Index rating for Burrard Inlet.

### Recommendations

Future Ministry monitoring in Burrard Inlet should focus on:

- Enterococci in high use recreational areas.
- Dissolved oxygen.
- Sediment sampling and analyses for metals, mercury, PAHs and PCBs (including different congeners).
- Fish tissue sampling including analyses with lower laboratory detection limits.
- Biological tissue collection from a greater range of organisms to determine whether persistent organic pollutants (POPs), such as PCBs, are impacting on higher trophic levels via the food web.

For further information or to view the complete report, please contact:

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