

Report to the Rural Services and Wairarapa Committee
from Brett Stansfield, Water Quality Scientist

Annual Freshwater Quality Report

1. Purpose

To present the findings of the 1998/99 Annual Freshwater Quality Report to the Committee.

2. Background

2.1 The Wellington Regional Council monitors water quality at 50 river sites throughout the Region. It undertakes this monitoring to fulfil its responsibilities under the Resource Management Act 1991, the Regional Policy Statement, and the Regional Freshwater Plan.

2.2 Water quality data generated each year from the Wellington Region Rivers Baseline Water Quality Monitoring Programme is summarised in an annual report to fulfil a number of purposes. These are:

- To identify water quality needs
- To identify water quality related issues
- To provide information to assess compliance with Council's water quality objectives and identify areas where enhancement of water quality is necessary
- To evaluate the effectiveness of the policies and strategies relevant to river and stream water quality
- To provide data which can be used for making appropriate effects based decisions on resource consent applications

2.3 This report provides an assessment of the overall quality of rivers and streams throughout the Wellington region for the period March 1992 to February 1998.

3. Methods

- 3.1 The water quality sampling consisted of:
- Monthly sampling for chemical and microbiological variables and assessment of percentage algal cover.
 - Field measurement of dissolved oxygen, water clarity and temperature
 - Laboratory analysis of biological oxygen demand (BOD), conductivity, pH, turbidity, nutrients, and faecal coliforms.
 - Annual (summer) sampling of macroinvertebrates from the streambed.
- 3.2 The structure of the macroinvertebrate community is summarised by the Semi Qualitative Macroinvertebrate Index (SMCI) This index is the most commonly used index in New Zealand for expressing biological water quality.
- 3.3 The results were assessed using the following guidelines.
- The New Zealand Periphyton Guideline Prepared for The Ministry for the Environment (DRAFT 1999) – periphyton cover and dissolved nutrients (for the monitoring and managing enrichment of streams)
 - Australia and New Zealand Environment and Conservation Council Water Quality Guidelines 1992 - dissolved oxygen, total ammonia and pH (for the protection of aquatic ecosystems)
 - The Resource Management Act Schedule 3 – temperature and % saturation dissolved oxygen (for the protection of aquatic ecosystems)

4. Results

- 4.1 Sites with good water quality are either in, or in close proximity to forest parks.
- 4.2 Sites with poor water quality have comparatively small volumetric flows and are generally in urban or intensive agricultural areas.
- 4.3 The Waitohu, Ngarara, Porirua, Makara, Karori, Ngauranga, Pauatahanui, Mangaone, Mangaroa and Waiwhetu streams have amongst the poorest water quality in the region.
- 4.4 The Regional Council Freshwater Plan identifies a number of water bodies with poor water quality that require enhancement. Over the last four years the water quality at none of these sites has improved. The Ngarara Stream has shown increasing turbidity levels, the Waiwhetu Stream has shown increasing biochemical oxygen demand concentrations, both the Wainuiomata River and the Ngauranga Stream

have shown no change, while the lower Waiohine and Ruamahanga Rivers have shown increasing faecal coliform concentrations.

4.5 The preparation of this report has highlighted a number of areas where improvements could be made to the existing water quality monitoring programme to improve the accuracy of assessments of the health of the Regions rivers and streams. The suggestions, outlined below, will be considered as part of a review of the surface water quality monitoring programme that is currently being undertaken.

- The laboratories undertaking water quality analyses for Council should use consistent methods and detection limits for all water quality variables.
- Diurnal monitoring of temperature, pH, and dissolved oxygen should be undertaken at selected baseline water quality sites to gain a better understanding of fluctuations in water quality.
- Selected urban streams should be investigated to identify possible sources of contamination.
- The urban community index and urban stream habitat assessment developed by Suren et al (1988) should be trialed in selected urban streams.

5. Communication

The Annual Freshwater Quality Report will be circulated to the following Regional organisations:

- Territorial authorities
- Iwi authorities
- Public libraries
- Fish and Game Council
- Department of Conservation

6. Recommendation

1. *That the report be received*
2. *That the suggested changes to the baseline water quality monitoring programme be considered in the current network review.*

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