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Committee Regulatory  
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Science

## Recreational water quality monitoring report 2009/10

### 1. Purpose

To present the results of recreational water quality monitoring undertaken by the Greater Wellington Regional Council (Greater Wellington) and several of the territorial authorities in the Wellington region during the period 1 November 2009 to 31 March 2010 inclusive.

### 2. Background

Greater Wellington and the region's territorial authorities undertake a recreational water quality monitoring programme in order to:

- Fulfil respective legislative responsibilities, and
- Establish background levels of faecal bacteria in surface waters, thereby permitting assessment of environmental contamination

Bacteriological results are assessed against the national recreational water quality guidelines published by the Ministry for the Environment (MfE) and the Ministry of Health (MoH) (2003). These guidelines use bacteriological indicators associated with the gut of warm-blooded animals to assess the risk of faecal contamination and therefore the potential presence of harmful pathogens. Compliance with the guidelines should ensure that people using water for contact recreation are not exposed to significant health risks.

At freshwater sites periphyton (algae and cyanobacteria) cover is assessed as excessive amounts of periphyton can reduce the amenity value of waterways and some species of cyanobacteria can produce toxins which can be harmful to humans and animals, particularly dogs. This year cyanobacteria cover results from freshwater sites have been assessed against the MfE and MoH (2009) interim guidelines for cyanobacteria. Filamentous and mat periphyton cover assessments are assessed against the MfE (2000) nuisance periphyton guidelines.

### 3. Methods

Recreational water quality monitoring in the western part of the Wellington region was carried out by four territorial authorities and Greater Wellington, and in the Wairarapa by Greater Wellington. Ninety-seven sites were monitored during the summer bathing season, with most sites sampled weekly. On each occasion a single water sample was collected 0.2 metres below the surface in 0.5 metres water depth and analysed for *Escherichia coli* (fresh waters) or enterococci (marine) indicator bacteria<sup>1</sup>. Visual estimates of periphyton cover are also made at freshwater bathing sites.

### 4. Results and discussion

The results are presented in detail in the report “*On the beaches 2009/10: Annual recreational water quality monitoring report for the Wellington region*”. The main findings of the report are summarised below.

#### 4.1 Fresh waters

- Fourteen of the 23 freshwater sites (61%) monitored over the 2009/10 summer exceeded the “action” guideline of 550 *E. coli*/100 mL on at least one occasion (Figure 1).

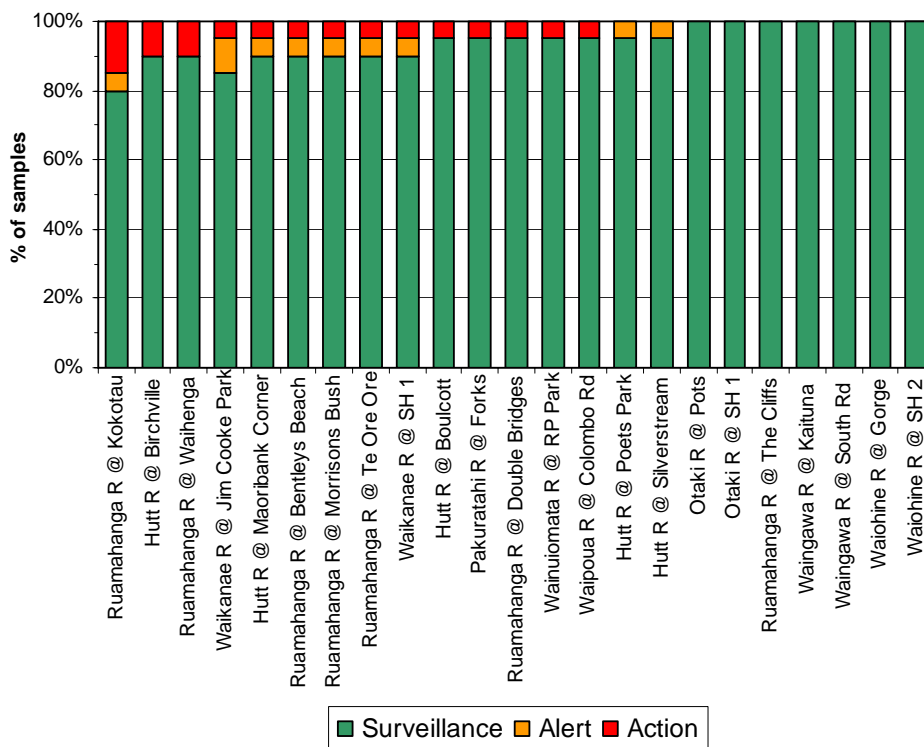


Figure 1: Summary of compliance with the surveillance, alert and action levels of the MfE/MoH (2003) guidelines for freshwater sites monitored weekly, expressed as a percentage of the total number of routine sampling events over the 2009/10 summer

<sup>1</sup> Samples from nine marine sites were also analysed for faecal coliform indicator bacteria, the preferred microbiological indicator for recreational shellfish gathering waters. Recreational shellfish gathering water quality results are not presented here.

- A total of 18 (4.2%) routine sampling results exceeded the action guideline of 550 cfu/100 mL. This was less than the 2008/09 and 2007/08 summers (23 exceedances in each)
- All of the 18 action level results were associated with at least 10mm of rainfall in the 72 hours prior to sampling. This finding is consistent with previous observations; elevated *E. coli* counts in fresh water are typically related to diffuse-source runoff, urban stormwater (including sewer overflows), and re-suspension of sediments during rainfall events
- Potentially toxic cyanobacterial mats were widespread in the Waipoua River at Colombo Road (central Masterton) from mid January onwards. Alert-level warning signs were put up along the river in the week of 11 January 2010. These signs were replaced with action level warning signs the following week as significant amounts of detached cyanobacterial mats were accumulating on the river's edge. Unfortunately a dog died on 22 February after coming into contact with cyanobacteria mats at Bentley Street
- In other rivers in the region, frequent freshes meant that cover of cyanobacterial mats was less than in previous years. Alert-level warning signs were in place along parts of the Hutt and Waikanae Rivers for much of the summer but no human or other animal health incidents were reported
- Periphyton cover remained below the Ministry for the Environment (MfE 2000) aesthetic and recreation guidelines throughout the summer at most (18 out of 23) sites

## 4.2 Marine waters

Thirty-eight of the 74 marine sites (51.4%) monitored over the 2009/10 summer bathing season exceeded the action guideline, although many of these (27 sites) exceeded the guideline on only one occasion (Table 1).

One site, Owhiro Bay, exceeded the action guideline nine times during the bathing season. Health warning signs were put up around Owhiro Bay after consecutive samples taken on 25 and 26 January 2010 exceeded the action guideline. In the following weeks on-going exceedances of the action guideline triggered extensive investigation by Capacity (Wellington Water Management) to identify the source of contamination within the Owhiro Bay catchment. The investigation found several significant faults in the public and private sewer network and over 170 metres of sewer repairs were completed. Repairs were undertaken on sewer and stormwater systems in Reuben Avenue, Todman Street, Taft Street, Butt Street, Borlase Street, Mornington Street, Severn Street and Owhiro Bay Parade. Renewal of parts of the sewer mains along Happy Valley Road and Owhiro Bay Parade will be undertaken over the next financial year. Health warning signs were removed from Owhiro Bay on 23 April 2010 after results from several consecutive samples complied with the surveillance guideline.

Table 1: Summary of action guideline breaches from routine weekly monitoring at 74 marine sites over the 2009/10 summer bathing season†

No. of Times Site Exceeded the Action Guideline	No. of Sites in each Exceedance Category					Total No. of Sites (74)	% of Sites
	Kapiti (20 sites)	Porirua (13 sites)	Hutt (15 sites)	Wellington (21 sites)	Wairarapa (5 sites)		
0	7	4	6	18	1	36	48.6
1	11	4	6	2	4	27	36.5
2	2	2	3	0	0	7	9.5
3	0	1	0	0	0	1	1.4
4	0	2	0	0	0	2	2.7
9	0	0	0	1	0	1	1.4

† includes four sites (one in Hutt City and the Wairarapa and two in Wellington City) sampled fortnightly and one site (in Hutt City) sampled monthly.

In 2009/10 a total of 61 (4.2%) routine sampling results exceeded the action guideline of 280 cfu/100 mL. This was greater than in the 2008/09 bathing season when 32 exceedances were recorded. However, a similar number of exceedances (66) were recorded during the 2007/08 summer.

Apart from those at Owhiro Bay, the majority (42) of the 61 action events were associated with at least 10mm of rainfall in the three days prior to sampling. This finding is consistent with previous observations; elevated enterococci counts in marine waters are often related to urban stormwater (including sewer overflows), diffuse-source runoff into rivers and streams and re-suspension of sediments during rainfall events. Re-suspension of sediments (due to winds and/or tidal action) can also affect some beaches in dry weather as can poor water quality in rivers, streams and drains discharging directly to the coast.

## 5. Summary

As with previous years, recreational water quality at freshwater bathing sites was strongly influenced by rainfall. The majority of monitored sites exceeded the action guideline at least once following rainfall, reflecting the effects of diffuse source agricultural and/or urban stormwater run-off (most sites are located within catchments with a significant portion of pastoral or urban land cover).

The number of marine bathing sites that exceeded the action guideline over the 2009/10 summer was more than the previous summer (51% in 2009/10 compared to 23% in the 2008/09) but similar to the 2007/08 and 2006/07 bathing seasons when 56% and 39% of marine sites exceeded respectively. Only 11 sites (14.9%) exceeded the guideline more than once.

## 6. Communication

Copies of "On the Beaches 2009/10" will be sent to all the territorial authorities in the region and to Regional Public Health and Wairarapa Public Health. The report will also be made available to the public via Greater Wellington's bathing webpage and a press release issued. Details of Greater Wellington's

recreational water quality programme, including tables and graphs of the bacteriological data, are available on-line at [www.gw.govt.nz/on-the-beaches](http://www.gw.govt.nz/on-the-beaches).

## **7. Recommendations**

*That the Committee:*

1. *Receives the report.*
2. *Notes the content of the report.*

Report prepared by:

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