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Committee Environment
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Recreational water quality report 2006-2007

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 2006 to 31 March 2007 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.

The results of the programme are assessed against the national recreational water quality guidelines published by the Ministry for the Environment and the Ministry of Health (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.

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-eight 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 bacteria¹. Visual estimates of periphyton (algae and cyanobacteria) cover are also made at freshwater bathing sites; excessive amounts of periphyton can reduce the amenity value of waterways. Some species of cyanobacteria can also produce natural toxins which can be harmful to humans and animals, particularly dogs.

4. Results and discussion

The results are presented in detail in the report “On the beaches 2006-2007: Annual recreational water quality monitoring report for the Wellington region”. The main findings of the report are:

4.1 Fresh waters

- Sixteen of the 20 freshwater sites (80%) monitored weekly over the 2006-2007 summer exceeded the “action” guideline of 550 cfu/100 mL (Figure 1). Nine sites exceeded the guideline once and four sites exceeded the guideline twice.

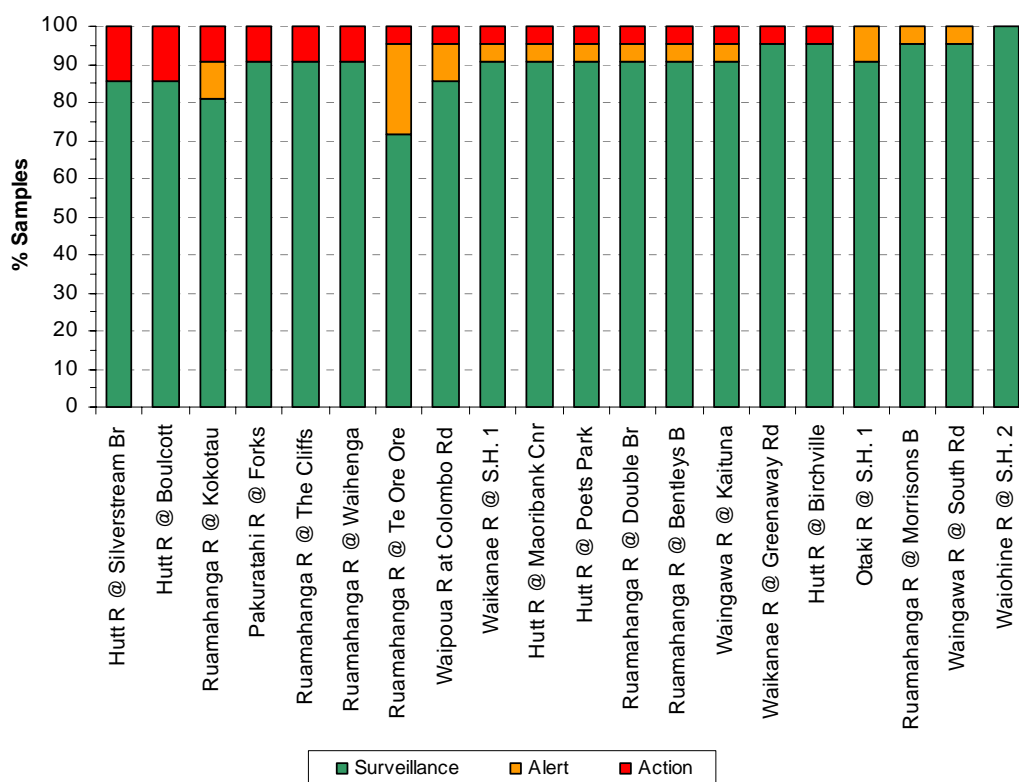


Figure 1: Summary of compliance with the surveillance, alert and action levels of the MfE/MoH (2003) guidelines for freshwater recreational areas, expressed as a percentage of the total number of routine weekly sampling events over the 2006/2007 summer.

* excludes the Otaki River at The Pots (Kapiti) and Waiohine River at Gorge (Wairarapa); these sites are now only sampled monthly under Greater Wellington’s Rivers State of the Environment water quality monitoring programme.

¹ Samples from six 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 28 routine sampling results exceeded the action guideline. This is eight fewer than the previous summer, although the 2005-2006 statistics included Riversdale Lagoon which exceeded the action guideline six times.
- The majority (25) of the 28 action level results were associated with at least 10 mm 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.
- Periphyton cover remained below the Ministry for the Environment (MfE 2000) aesthetic and recreation guidelines at all sites during November and December 2006. However, by January 2007, the riverbed at many sites had a high coverage of filamentous algae and/or cyanobacteria mats.
- Although the MfE (2000) threshold for benthic cyanobacteria cover was not exceeded at any monitored Kapiti sites, thick growths of the toxin-producing cyanobacterium *Phormidium* sp. were observed on parts of the bed of the Otaki River (State Highway 1) and Waikanae River (Greenaway Road) in February 2007, prompting the Kapiti Coast District Council to issue a media release and erect health warning signs. There was also significant coverage of cyanobacteria at bathing sites on other rivers in the region at the same time – including the Hutt River (Silverstream and Boulcott), the Waipoua River (Colombo Road) and the Ruamahanga River (Kokotau, Waihenga and Bentleys Beach). As a result, a general warning about the state of the region’s rivers was issued by Regional Public Health and posted on Greater Wellington’s website².

4.2 Marine waters

- Thirty of the 76 marine sites (39%) monitored over the 2006-2007 summer bathing season exceeded the action guideline of 280 cfu/100 mL. The majority of these (24 sites) exceeded the guideline on only one occasion (Table 1). Health warning signs were erected at bathing sites around Pauatahanui Inlet in late December 2006 after routine and consecutive follow-up sampling results exceeded the “action” guideline.
- The number of sites that remained below the action guideline for the duration of the bathing period (46) was similar to 2005-2006 (47 sites). However, the total number of action events over 2006-2007 was less (38 compared with 46 in 2005-2006), reflecting the fact that most sites exceeded the guideline only once.

² At the time of finalising this report (11 June), cyanobacteria coverage remains high at several sites, reflecting a lack of rainfall and subsequent ‘flushing’ river flows.

Table 1: Summary of action guideline breaches from routine weekly monitoring at 76 marine sites over the 2006-2007 summer bathing season*.

No. of Times Site Exceeded the Action Guideline	No. of Sites in each Exceedance Category					Total No. of Sites (76)	% of Sites
	Kapiti (20 sites)	Porirua (14 sites)	Hutt (15 sites)	Wellington (22 sites)	Wairarapa (5 sites)		
0	13	2	8	19	4	46	60.5
1	6	8	6	3	1	24	31.6
2	1	3	0	0	0	4	5.3
3	0	1	1	0	0	2	2.6

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

- The majority (27) of the 38 action events were associated with at least 10 mm of rainfall in the three days prior to sampling; 14 were associated with ≥ 10 mm of rainfall in the 24 hours prior to the day of 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. In some parts of the Wellington region, marine water quality can also be affected during dry weather by 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 stormwater run-off (most sites are located within catchments with a significant portion of pastoral or urban land cover).

Overall, recreational water quality at marine bathing sites in 2006-2007 was better than average; 60.5% of the 76 sites (compared with 30.5% on average over the five previous summers) did not exceed the action guideline on any occasion. Only six sites (8%) exceeded the guideline more than once.

6. Looking ahead – 2007-2008

From 1 July 2007, water temperature will be measured at all marine bathing sites (currently water temperature measurements are restricted to fresh water sites) and two new bathing sites will be monitored; the Wainuiomata River at Richard Prouse Park and Pauatahanui Inlet near the Paremata Bridge. In addition, water samples from all sites in the Pauatahanui Inlet and the Onepoto Arm of the Porirua Harbour, together with several sites along Paraparaumu Beach on the Kapiti Coast, will also be tested for turbidity to help assess the effects of sediment re-suspension on microbiological water quality.

7. Communications

Copies of "On the Beaches 2006-2007" 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 continuously available on-line at www.gw.govt.nz/on-the-beaches.

8. Recommendations

It is recommended that the Committee:

1. *Receives the report; and*
2. *Notes the contents.*

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