



# The Microbiological Quality of Marlborough Coastal Bathing Beaches 2005-2006

May 2006



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## Introduction

Marine water quality in Marlborough (Marlborough Sounds and the East Coast) was monitored at known recreational use sites during the summer period 2005-2006.

These sites and others have previously been graded using the Ministry for the Environment Microbiological Water Quality Guidelines for Marine Recreational Areas (June 2003). Beach grades were allocated to 21 sites in 2004 based on data from 1997 to 2004.

This report explains the Guidelines use and gives the results of monitoring at 15 sites during 2005-2006.

The microbiological quality of coastal bathing beaches is assessed by Marlborough District Council for guideline compliance purposes.

## Beach Grading

The two components to providing a grading for an individual beach are:

- Historic microbiological results (the ideal being 5 years of data), which generate a *Microbiological Assessment Category (MAC)*, which provides a measurement of the general water quality over an extended period of time.
- The *Sanitary Inspection Category (SIC)*, which generates a measure of the susceptibility of a water body to faecal contamination.

These two components combined give an overall *Suitability for Recreation Grade (SFRG)*, which describes the general condition of a site [at any given time], based on both risk and indicator bacteria counts. There are five SFRG - **Very good, good, fair, poor** and **very poor**.

The risk of becoming sick from swimming at a beach is inferred from the SFRG.

- For beaches graded **very good** there are few, low-level sources of faecal contamination in the catchment and there are less than 200 Enterococci/100mls (95<sup>th</sup> percentile), consequently the risk of becoming sick through recreational water activities at the beach is low.
- For beaches graded **very poor** there are significant sources of faecal contamination in the catchment and there are more than 400 Enterococci/100mls (95<sup>th</sup> percentile), consequently the risk of becoming sick through recreational water activities at the beach is, compared to a very good beach, high.

That is: **the risk** (of becoming sick from water based activities) **increases** as the beach grading shifts from very good to very poor.

The beach grades (SFRG) generated through the combination of the SIC and MAC assessments provide the state of the environment information to the public on the **GENERAL CONDITION** of the recreational area with respect to public health risk.

## Marlborough Beach Grades

In 2003 the Council implemented the new Ministry for the Environment and Ministry of Health guidelines for the grading of the water quality for marine recreational areas. Beach grades calculated in 2004 are shown in **Table 1**.

**Table 1**

**Table of post-season sanitary inspection categories (SIC), microbiological assessment category (MAC), and suitability for recreation grades (SFRG) at marine sites.**

	<b>Year</b>	<b>MAC Grade</b>	<b>SIC Grade</b>	<b>SFRG Grade</b>
Anakiwa	2000/04	C	Very Low	Follow up - Fair
Blackwood Bay	1998-04	C	Very High	Follow up - Very Poor
Bobs Bay	2000-04	B	Very Low	Very Good
Edwin Fox	1996-00	D	High	Very Poor
Furneaux Bay (East)	2000-04	A	High	Follow up - Poor
Furneaux Bay (Mid)	2000-04	B	High	Follow up - Poor
Furneaux Bay (West)	1997-01	B	High	Follow up - Poor
Marfells Beach	2000-04	A	Very Low	Very Good
Moenui	2000-04	B	Moderate	Good
Momorangi	2000-04	C	Very High	Follow up - very Poor
Ngakuta Bay	2000-04	B	Very High	Follow up - Very Poor
Okiwi Bay	2000-04	B	High	Follow up - Poor
Picton Foreshore	2000-04	D	High	Very Poor
Picton Marina	1996-00	D	High	Very Poor
Portage	2000-04	D	Very High	Very Poor
Shelly Beach	2000-04	C	Very Low	Follow up - Fair
Te Mahia	2000-04	B	Very Low	Very Good
Waikawa	2000-04	C	Moderate	Fair
Wairau Bar	2000-04	B	High	Follow up - Poor
Wairau Diversion	2000-04	C	Moderate	Fair
Whites Bay	1997-01	A	Very Low	Very Good

## The Effect of Rainfall on Microbiological Data

Removal of the rainfall-affected microbiological data may result in a change in the 95<sup>th</sup> percentile value at some sites; this is suggestive of rainfall having a considerable effect on the number of faecal indicator organisms present in the seawater. At some sites the change in the 95<sup>th</sup> percentile value will result in a change to the MAC. In addition, removal of rainfall data means that the sanitary inspection category sources are re-evaluated and at some sites this may also lead to a change in the SIC.

## Marine Sites 2005-2006

The following sites were all sampled during 2005-2006. Site details are in **Appendix 1**.

Wairau Diversion	Momorangi
Wairau Bar	Ngakuta Bay
Bobs Bay	Moenui
Shelly Beach	Tirimoana
Picton Foreshore	Anakiwa
Waikawa Bay	Te Mahia
Marfells Beach	Portage
Whites Bay	

## 2005-2006 Summer Monitoring Results

Sites were sampled once a week from November to the end of March.

Results show that generally the water quality at coastal sites is suitable for contact recreation. Rainfall events trigger increased numbers of faecal bacteria at most sites. The source of faecal contamination is frequently feral (wild animals in bush catchments), but for many sites the input is from contaminated storm water discharges, or is directly related to human sewage sources. Human sewage may be from overloaded septic tanks, direct discharges of treated sewage, on boats moored nearby. There are also occasions where the source of contamination is unknown.

Beach grades reported in Marlborough range from very poor to very good, with many sites requiring follow up work. This may mean that the catchment assessments need to be looked at more thoroughly, or it may be necessary to get more water quality results to calculate the MAC grade.

## Results

A table of all results and result charts for each site are shown in **Appendix 2**.

## Coastal Beach Water Quality Tests for the 2005 - 06 Summer Season

The results for the coastal beach water quality tests for the 2005-2006 summer season have been reported on the website each week. **Table 2** summarises these results, showing the percent of time that the site was not suitable for recreational use.

The guideline for safe swimming is **280 Enterococci/100mL**.

**Table 2**

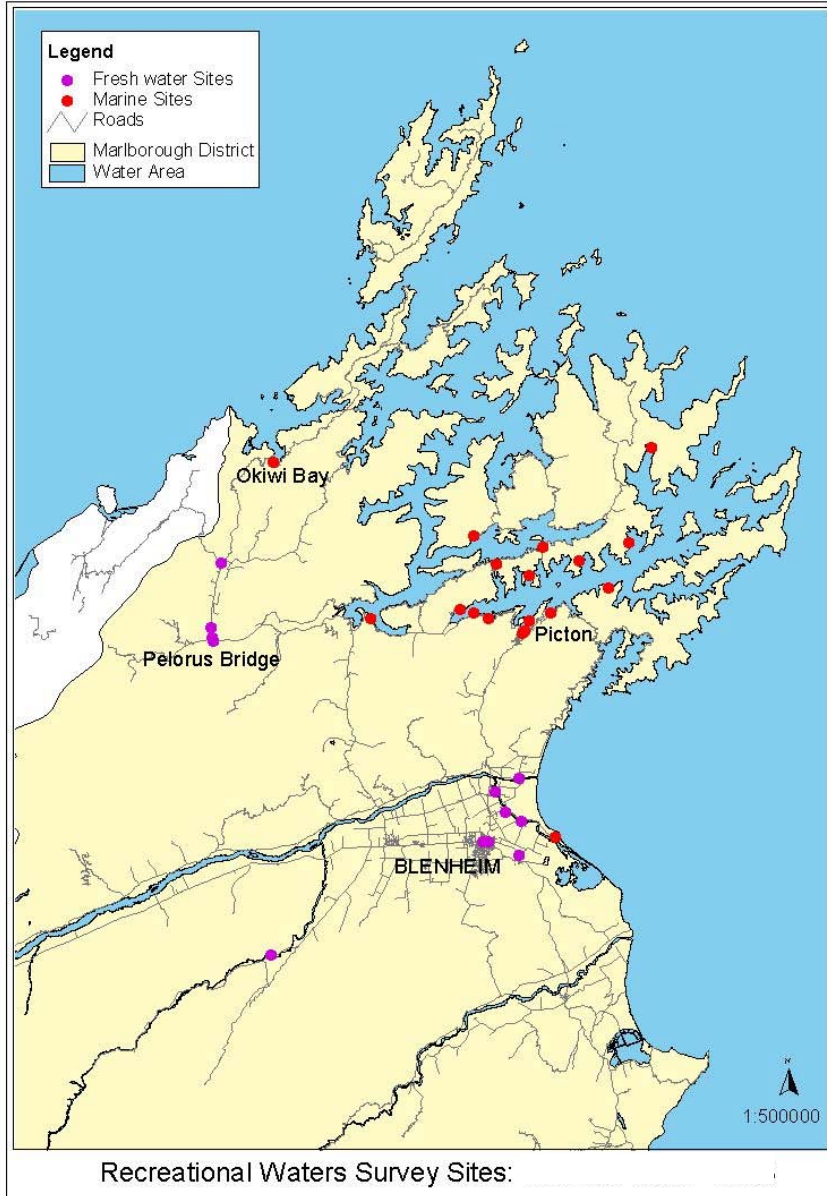
<b>Water Quality For Marlborough Beaches monitored November 2005 – March 2006</b>	<b>Water Quality Results. Percent of sampling events that exceeded 280/100mL</b>	<b>Number of sampling events over the summer period</b>
<b>Marfells Beach</b>	<b>0 ☺</b>	<b>4</b>
<b>Wairau Bar</b>	<b>5 ☺</b>	<b>19</b>
<b>Wairau Diversion</b>	<b>0 ☺</b>	<b>19</b>
<b>Waikawa Bay</b>	<b>5 ☺</b>	<b>22</b>
<b>Bobs Bay</b>	<b>0 ☺</b>	<b>15</b>
<b>Shelly Beach</b>	<b>5 ☺</b>	<b>22</b>
<b>Picton Foreshore</b>	<b>14 ☹</b>	<b>22</b>
<b>Ngakuta Bay</b>	<b>0 ☺</b>	<b>22</b>
<b>Momorangi Bay</b>	<b>14 ☹</b>	<b>22</b>
<b>Anakiwa</b>	<b>14 ☹</b>	<b>22</b>
<b>Tirimoana</b>	<b>5 ☺</b>	<b>22</b>
<b>Te Mahia</b>	<b>9 ☺</b>	<b>22</b>
<b>Portage</b>	<b>0 ☺</b>	<b>18</b>
<b>Moenui</b>	<b>0 ☺</b>	<b>22</b>
<b>Whites Bay</b>	<b>0 ☺</b>	<b>19</b>

**Recommendation**

- **That the Council continues to monitor the marine bathing sites in accordance with the Ministry for the Environment Guidelines.**

# Appendix 1

## Site Map



## Site Descriptions

- **Anakiwa and Tirimoana**



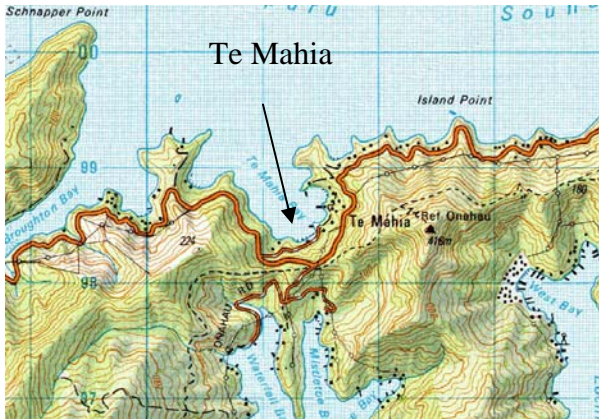
Anakiwa is an enclosed bay at the western end of the Queen Charlotte Sound. It has an annual average rainfall of 1500mm and is used all seasons for swimming, water sports and boating. The beach is sand and stones and is surrounded by housing and bush clad hills.

The Outward Bound School has a sophisticated sewage treatment system with tertiary treatment and discharge to an inland man-made wetland. Domestic sewage disposal systems are contained on site. Although discharges to the sea have occurred from some domestic sources, there have been significant upgrades in the past two years.

Tirimoana is a closely settled bay adjacent to Anakiwa (70-80 houses) with onsite sewage treatment and disposal systems. There have been recorded incidents of discharge from some sites to small streams to the bay. Dense estuarine mud at the head of Okiwa Bay has a strong odour when the tide is low. Several surveys including sediment sampling indicate that there is no contamination from sewage in the sediments. There is swimming from the jetty, and boating and kayaking in the bay.



- **Te Mahia**



Te Mahia is an enclosed bay in the Kenepuru Sound. There is an annual average rainfall of 2000mm per year. The beach is pebbly and there is a surrounding shoreline of steep bush-clad hills. Swimming and boating are popular.

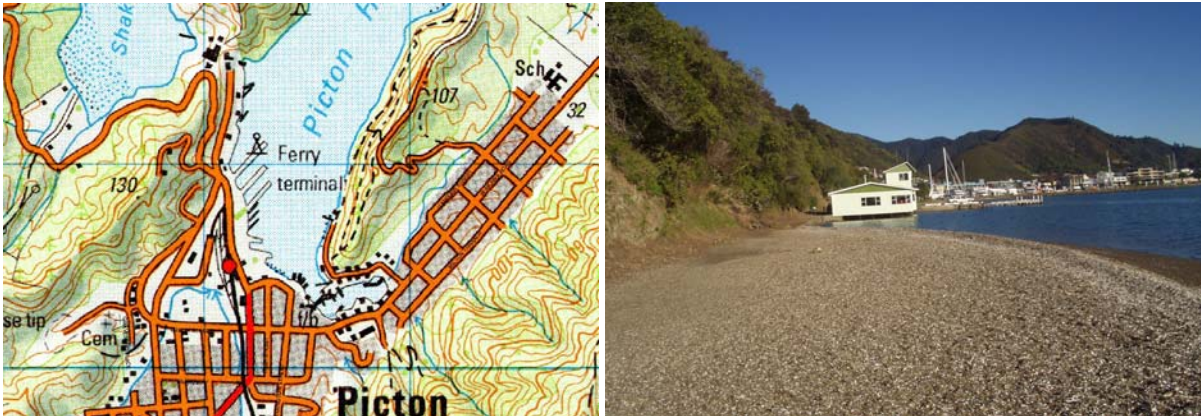
There is onsite sewage treatment, with septic tanks discharging inland in the bush. Grey water is discharged directly to the sea. Monitoring since 1996 has shown no impact on the coastal water from any discharge to land or directly from the grey water system.

- **Portage**



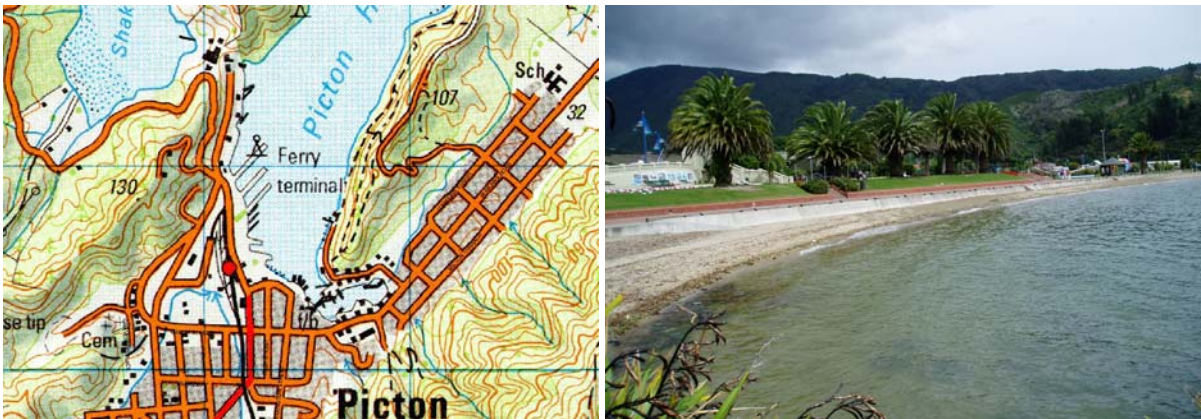
Portage Bay is an enclosed bay of the Kenepuru Sound. There is an annual average rainfall of 2000mm per year. There is a large hotel complex and some 12-15 houses. A sewage treatment system servicing the hotel, shop and some houses, discharges to the bay at approx 0.5K from the inner bay shoreline. The beach is sand and stones, and steep bush clad hills surround the bay.

- **Shelley Beach**



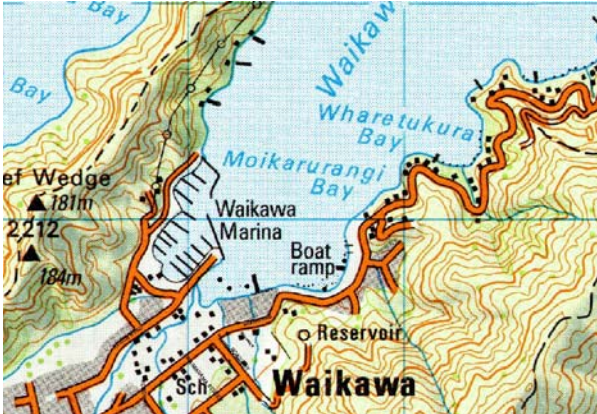
Shelley Beach is located in Picton Harbour on the eastern side. There is an annual average rainfall of 1500mm per year. The beach is sand and stones and is surrounded by steep bush-clad hills. The Queen Charlotte Yacht Club is situated at one end of the beach. The water quality of Picton Harbour is at times not suitable for recreational use, and this includes the Shelley Beach site. Storm water discharges and occasional sewage overflows affect water quality in the harbour at most of the recreational sites, especially after heavy rain events.

- **Picton Foreshore**



The Picton Foreshore beach is located at the head of Picton Harbour. The annual average rainfall is 1500mm. The shore is small stones with imported sand, and the area has been developed and landscaped as a playground with grass, palm trees and concrete and paving structures. A children's paddling pool discharges to the beach. The sea water quality is affected by discharges from stormwater outlets from the urban area, and from streams from the upper, bush-clad, catchment. The site is also adjacent to the Picton Marina and to the Picton Wharf. At times water quality is not suitable for recreational use. This relates to heavy rainfall events, and also sewage overflows to the stormwater system or directly to streams that discharge to the sea.

- **Waikawa Bay**



Waikawa Bay is an enclosed bay in Queen Charlotte Sound. The annual average rainfall is 1500mm. The bay is used for swimming, and boats are moored in the bay and adjacent boat marina. The beach is sand and stones, with a landscaped area of grass and walls. The beach is surrounded with houses and bush-clad hills. There are storm water discharges to the bay from the urban area and the upper catchment.

- **Marfells Beach**



Marfells Beach is approximately 45K south of Blenheim, on the Pacific (east) coast. The beach is sand and stones with dunes and small hills rising to pasture flats. Adjacent to the beach is a narrow stretch of road and grassed areas with camping sites for tents and caravans. There is a DoC toilet and cold water ablation block. The beach and camping sites are used throughout the year, and intensively in the summer time. Fishing, boating and swimming are popular activities.

- **Whites Bay**



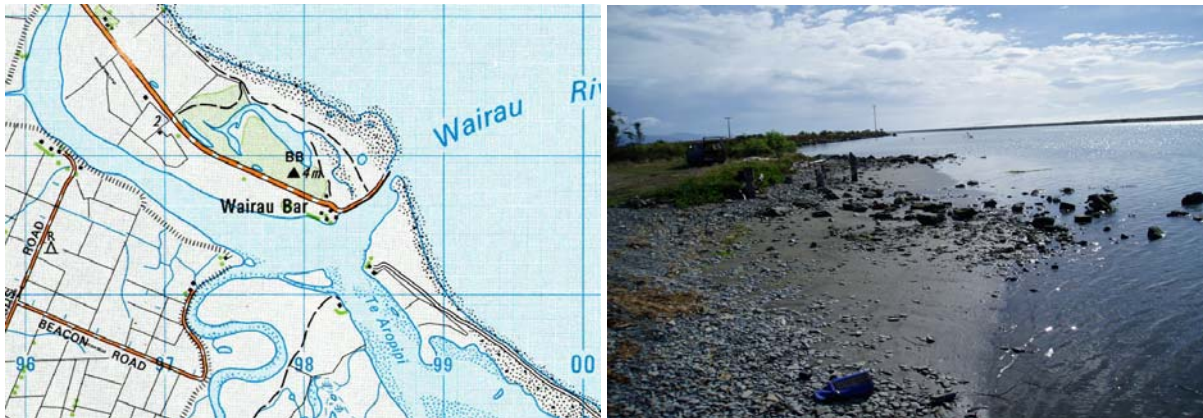
Whites Bay is situated on the east coast at the southern entrance to Cook Strait, about 25K north of Blenheim. It is an enclosed bay with a sandy beach and dunes with rocky headlands. The surrounding area is flat with grassed areas and bush where there is a camping site, and has surrounding steep bush-clad hills. There is a DoC information site with toilets and an ablution block. The site is a popular summer swimming site, and there is some surfing and fishing all year.

- **Wairau Diversion**



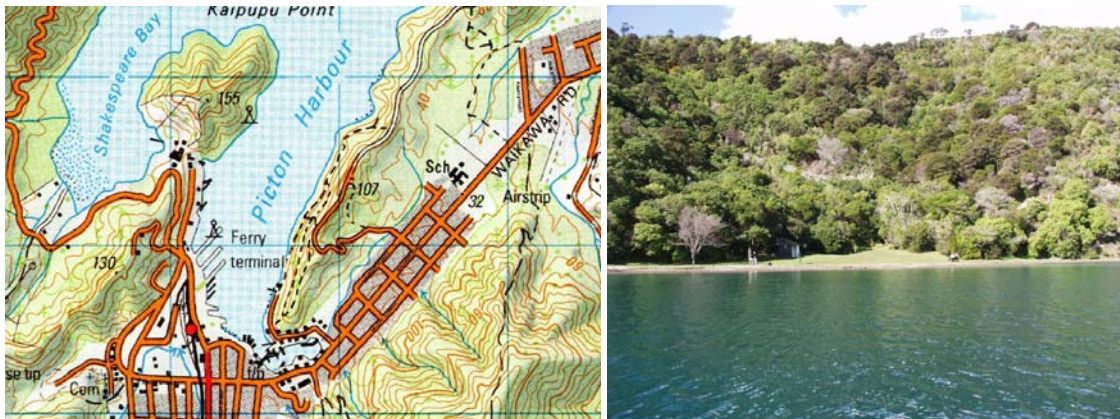
The Wairau Diversion is a man-made channel, diverting part of the Wairau River at Tuamarina through pasture and vineyards to the east coast. The average annual rainfall is 760mm. There is a small shingle bar at the mouth of the Diversion. Both the open coast and the partly enclosed mouth of the Diversion are used for fishing. Surf casting to the open sea, and whitebaiting and fishing for flounder, etc, are very popular. Monitoring of the water quality is done within the tidal area at the mouth of the Diversion where there is swimming. There is some impact on the water quality in the Diversion from farming (dairying and piggeries) at times, but this is generally farm runoff rather than direct discharges. There is no camping permitted at this site, and there are no facilities, apart from a toilet block, but it is not uncommon for campervans and vehicles to be at the site for long periods of time.

- **Wairau Bar**



The Wairau Bar is located at the mouth of the Wairau River some 500 metres from where the Boulder Bank, enclosing the Wairau Lagoons, extends in a northerly direction to the lagoons and estuarine area. This site is at the confluence of the Wairau and Opawa Rivers and the exit channel from the Lagoons (Te Aropipi). The site is popular with whitebaiters and fishers (mostly set nets for flounder within the bar, and surf casting outside of the bar). There is also recreational boating, kayaking, wind surfing and swimming within the enclosed area. Shellfish (cockles and pipipi) are abundant. The Lagoons are also populated with large numbers of birds. There is a DoC toilet block, but no other camping facilities. The beach is mostly stones with a small area of sand. Use of the area is restricted (shellfish cannot be taken for consumption) because effluent is discharged from the Blenheim oxidation pond to the Opawa River approximately 3K upstream of the estuary. However, monitoring shows that the water quality is at most times suitable for contact recreation.

- **Bobs Bay**



Bobs Bay is situated in the Queen Charlotte Sound and is accessible only on foot or by boat. It is approximately a 20 minute walk from Picton. It is an open bay with a sand and stone beach and surrounding bush-clad hills. Other than tidal influences and impacts from passing ferries, there is no direct source of faecal input. There is a DoC toilet block with septic tank. Monitoring shows that the water quality is generally suitable for contact recreation.

- Momorangi



Momorangi is an enclosed bay at the western end of the Queen Charlotte Sound diagonally opposite Outward Bound . It has an annual average rainfall of 1500mm and is used all seasons for swimming, water sports and boating. The beach is sand and stones and is surrounded by some housing, a camping ground and shop, and bush-clad hills. There are cockle and pipi beds, and mussels at the rocky headlands. The motor camp sewage treatment system discharges to sea (mid bay) approximately 300 metres off shore. At times high numbers of bacteria are discharged from the system. Taking shellfish is not recommended, and monitoring shows that at times the water quality is not suitable for contact recreation. Proposed upgrading of the treatment system with discharge to land should result in improved water quality and a reduced health risk associated with recreational use.

- **Ngakuta Bay**



Ngakuta Bay is an enclosed bay located in the inner Queen Charlotte Sound. The beach is sandy with input from several small streams resulting in estuarine conditions in the eastern part of the bay. Public use is mostly in the western part where there is a carpark and public toilets. There is a jetty and the bay has numerous boat moorings. There are approximately 70-80 houses and holiday homes in the bay, and the bay is surrounded by bush-clad hills. There are drains from several sections to the bay discharging storm water and at times these are contaminated with septic tank overflows. There are extensive cockle beds in the east bay, cockle and pippi beds in the west bay and mussels on the rocky points. Water quality is generally suitable for contact recreation, but the shellfish are compromised during peak visitor times. Monitoring has shown that shellfish should not be taken during the summer period.

- **Moenui**



Moenui is a small settlement of some 45 houses in the Mahakipawa Arm of the Pelorus Sound. Access to the coast is through private property. The beach is stony and surrounded by housing and bush. Water quality has been monitored for just two years and is suitable for contact recreation.

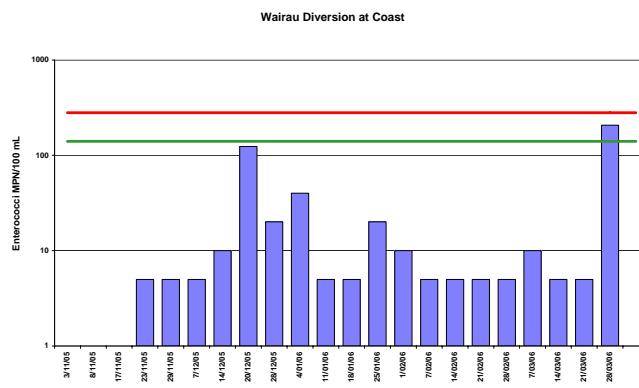
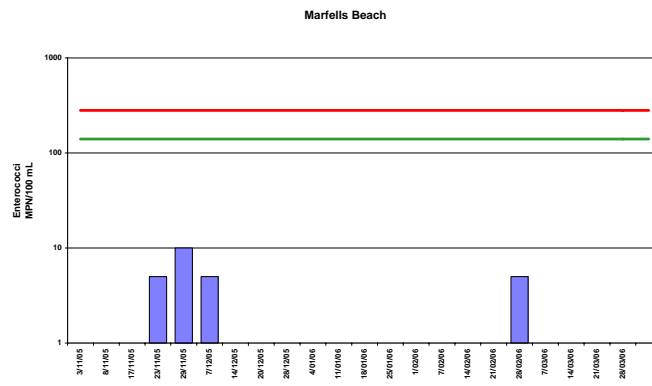
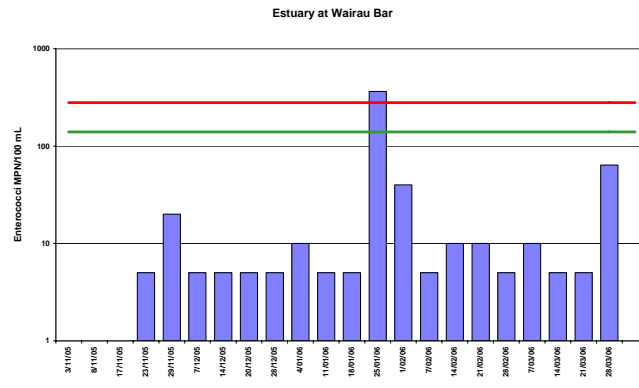
## Appendix 2

### All Results

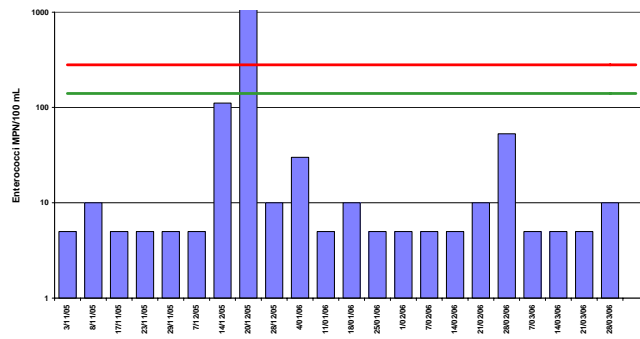
	MB-1	WRR-7	WDV-2	WKB-1	PCT-3	PCT4A	PCT-5	NGK-1	MOM-1	GRO-1	TIR-5	TEM-1	POR-1	MOE-1	WB-1
	Marfells Beach	Wairau Bar	Wairau Diversion	Waikawa Bay	Bobs Bay	Shelly Beach North	Picton Foreshore	Ngakuta Bay	Momorangi Bay	Anakiwia	Tirimoana	Te Mahia	Portage	Moenui	Whites Bay
Date															
3/11/05				5		5	20	5	10	5	5	5	20	5	
8/11/05				10		5	5	5	5	5	5	5	5	5	
17/11/05				5		10	5	5	20	5	5	5	5	10	
23/11/05	5	5	5	5	5	5	10	5	5	5	5	5	5	5	5
29/11/05	10	20	5	5	5	5	5	5	5	10	5	5	5	5	5
7/12/05	5	5	5	5	5	40	10	20	5	10	5	5	5	5	10
14/12/05		5	10	111	5	5	5	5	10	5	5	5	30	10	5
20/12/05		5	124	1100	5	344	2000	64	344	2000	137	429	137	64	5
28/12/05		5	20	10		5	10	5	5	5	5	5	5	5	5
4/01/06		10	40	30	5	5	111	64	5	5	20	40	124	20	5
11/01/06		5	5	5	5	5	40	5	10	5	5	5	5	5	5
18/01/06		5	5	10		222	75	10	87	5	75	10	5	5	5
25/01/06		364	20	5		222	782	124	20	1200	406	659	222	164	40
1/02/06		40	10	5	124	5	20	5	75	53	20	10	5	30	5
7/02/06		5	5	5		5	40	5	5	10	5	10	10	5	5
14/02/06		10	5	5	30	5	271	30	344	10	5	53	5	5	30
21/02/06		10	5	10	53	5	64	10	20	5	5	5	5	5	5
28/02/06	5	5	5	53	30	10	406	64	75	53	64	5		5	5
7/03/06		10	10	5	30	30	20	30	5	40	10	5		10	75
14/03/06		5	5	5	5	5	30	20	30	53	10	5	5	20	5
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28/03/06		64	207	10	99	87	87	150	624	1700	124	10		5	5



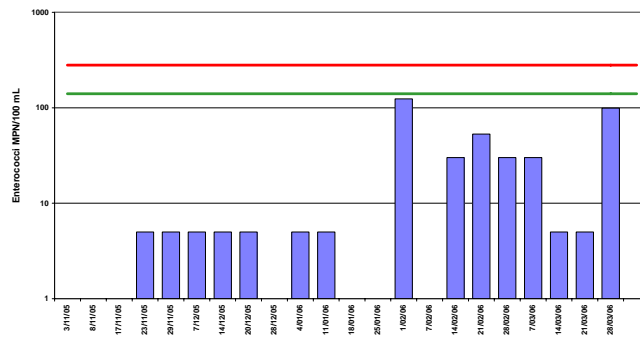
# Graphs



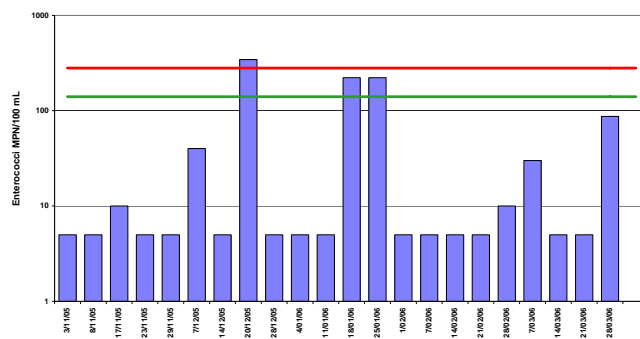
Waikawa Bay



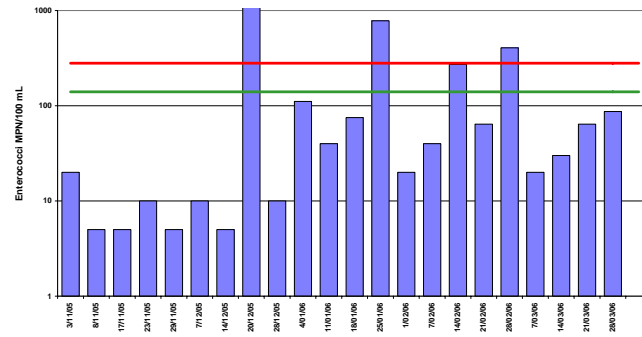
Bobs Bay



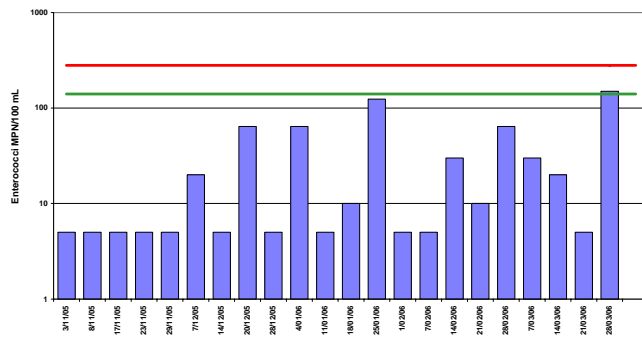
Shelly Beach



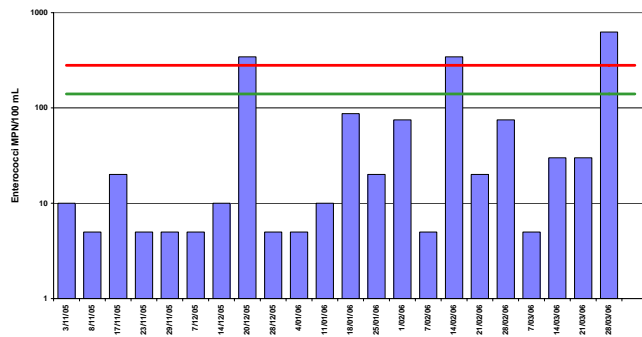
Picton Foreshore

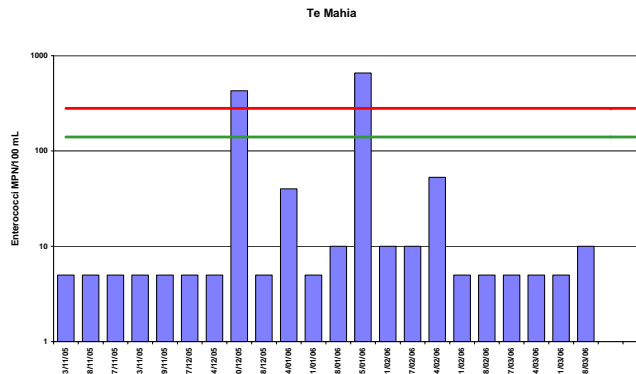
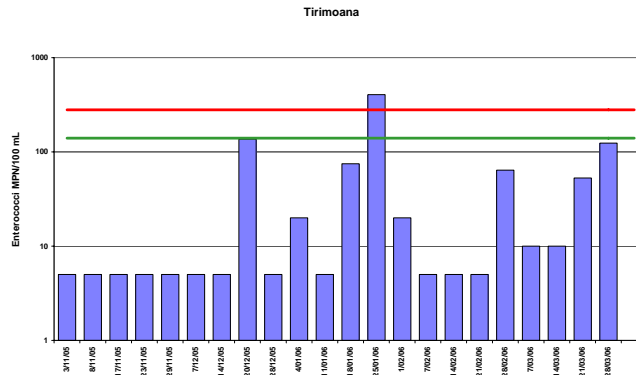
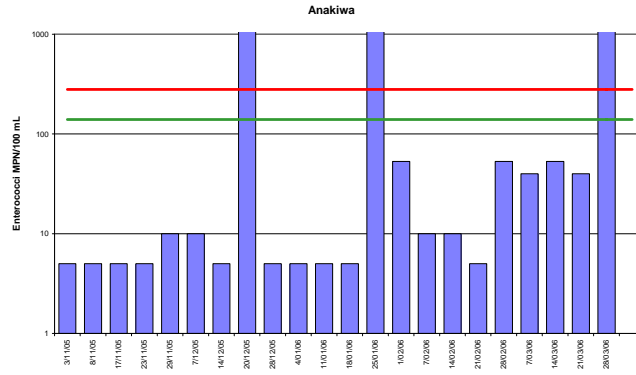


Ngakata Bay

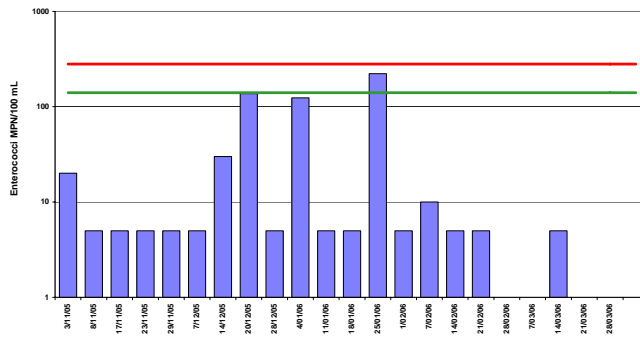


Momorangi Bay

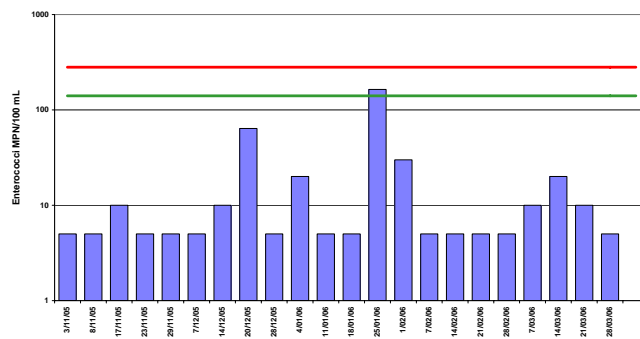




Portage



Moenui



Whites Bay

