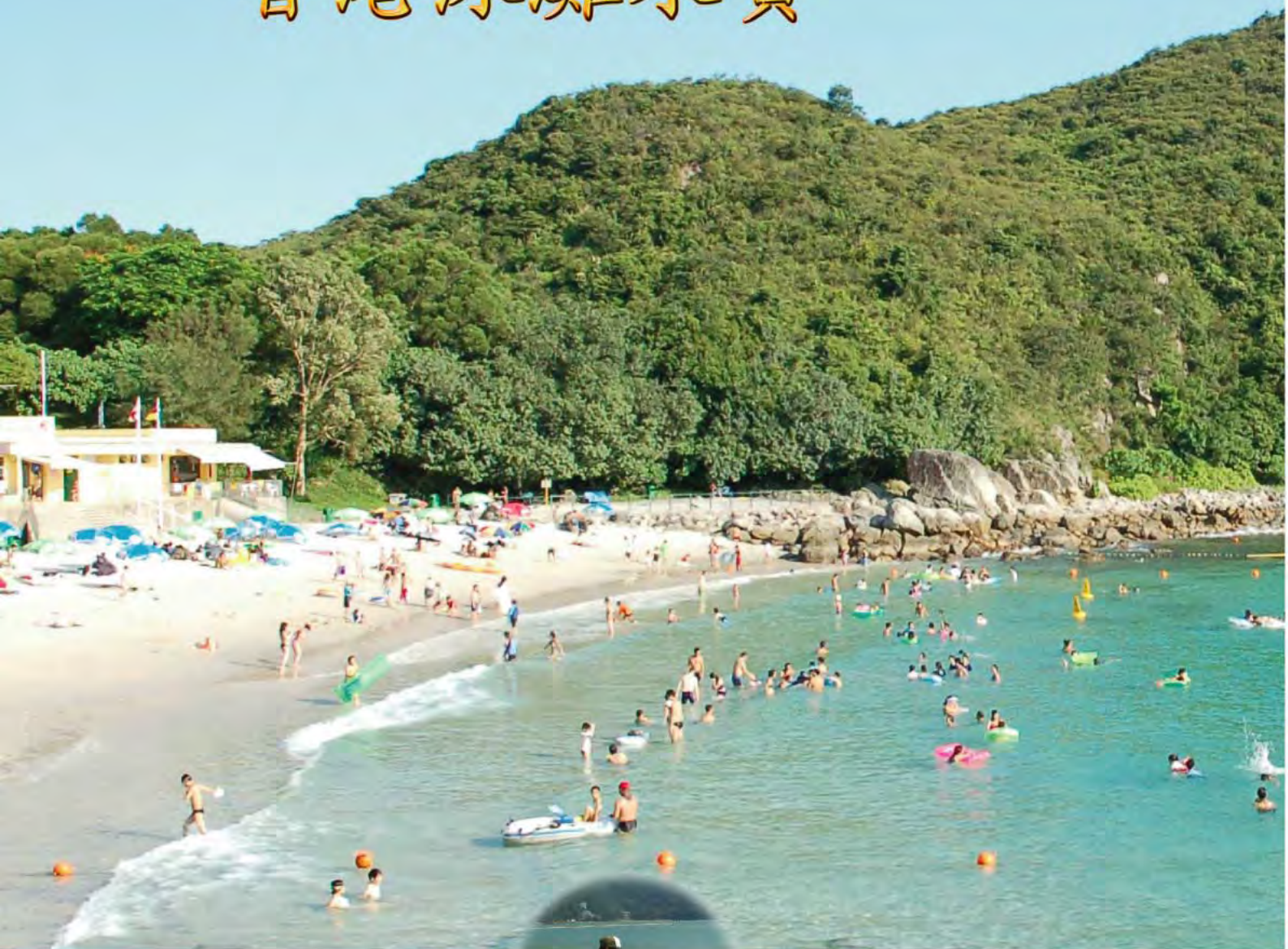


# Beach Water Quality

## in Hong Kong

# 2007

# 香港泳灘水質



環境保護署  
香港特別行政區政府

Environmental Protection Department  
The Government of the Hong Kong Special Administrative Region



## Beach Water Quality in Hong Kong 2007

### *Our Mission*

*To safeguard the health and welfare of the community and meet conservation goals by working to achieve and maintain the Water Quality Objective for bathing beaches*



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Beaches are an integral part of Hong Kong coastal landscape. (aerial photo of Deep Water Bay and Repulse Bay)





# Beach Water Quality in Hong Kong 2007

## Introduction

In 2007, beach goers in Hong Kong enjoyed the sunshine and blue sky of a drier than usual summer. The Environmental Protection Department (EPD) continued to monitor the water quality of bathing beaches and found it to be the best ever on record since the monitoring programme began in 1986. The objective of the programme is to monitor and improve beach water quality and protect the health of the bathers. The background and details of EPD's monitoring activities are found on the website (<http://www.epd.gov.hk>).



Blue sky, bright sunlight and clean water greet bathers at Big Wave Bay Beach

This report summarises the beach monitoring data collected in 2007, assessing beach gradings and compliance with the Water Quality Objective (WQO). In 2007, the EPD monitored 41 gazetted beaches and three non-gazetted beaches located in different parts of the territory. The monitoring frequency was at least three times a month during the bathing season from March to October. During monitoring the EPD staff made field observations, took measurements such as water temperature and dissolved oxygen, and collected samples for further laboratory tests for the faecal bacteria *E. coli* and other water quality parameters (pH, salinity and turbidity).





## Beach Water Quality in Hong Kong 2007

Hong Kong's beaches are assessed using a dual system, annual ranking and weekly grading based on the *E. coli* level in beach water, which indicates potential health risks associated with swimming. The annual ranking reflects the overall water quality of the beach in the bathing season, while the weekly grading denotes the recent water quality of the beach. Under the dual rating system, beaches are categorised into "Good", "Fair", "Poor" and "Very Poor", and those ranked "Good" and "Fair" meet the WQO for bathing waters.

### Annual Beach Ranking in 2007

The beach water quality in 2007 was the best on record, while the number of "Good" beaches was the same as the highest level reached in 2004 (61% or 25 out of 41 gazetted beaches), no beach was ranked "Very Poor". Nine other beaches (22%) were ranked as "Fair" and seven (17%) as "Poor". In terms of WQO compliance, thirty-four (or 83%) of the 41 gazetted beaches in Hong Kong complied with the WQO, the same as in the previous four years (2003 to 2006).



Repulse Bay Beach at dusk – a popular beach for locals and visitors alike

The beaches with "Good" water quality ranking were mainly located in the Southern District (Hong Kong Island South), Sai Kung area, and Outlying Islands. All 12 beaches in the Southern District were ranked as "Good" in 2007, with Big Wave Bay and Rocky Bay Beaches improved from "Fair" to "Good". On the Outlying Islands, of the nine beaches monitored, eight were "Good" while Pui O Beach was rated as "Fair". The rankings of Cheung Chau Tung Wan and Silver Mine Bay Beaches improved from "Fair" to "Good" in 2007. Five of the six beaches in the Sai Kung area were "Good" with Silverstrand Beach being the only one ranked as "Fair"; however, the *E. coli* levels of this beach have been decreasing in the last few years, indicating a steady improvement in water quality. On the western side, all six beaches along the Tuen Mun coast received a "Fair" ranking in 2007. In the Tsuen Wan area, seven beaches had a "Poor" water quality ranking and were closed to swimmers. Ma Wan Tung Wan Beach ranked as "Fair" in 2007 and was the only beach open to the swimmers in the Tsuen Wan area. The Government is currently taking active measures to improve the water quality of Tsuen Wan beaches.





## Beach Water Quality in Hong Kong 2007

The EPD also monitored three non-gazetted beaches in Hong Kong: Discovery Bay (a popular beach on Lantau Island), a sandy beach adjacent to Kiu Tsui Beach in Sai Kung, and a planned artificial beach in Lung Mei, Tai Po. While Discovery Bay and the beach adjacent to Kiu Tsui Beach were ranked “Good” in 2007, Lung Mei was ranked “Poor”. Drainage diversion and pollution control measures should be able to improve water quality in the Lung Mei area in the next few years.

Overall, the beach water quality in 2007 has further improved with the highest number of “Good” beaches (25), the same as in 2004. Four beaches at Big Wave Bay, Cheung Chau Tung Wan, Rocky Bay and Silver Mine Bay have improved from “Fair” to “Good”, Anglers’ and Gemini Beaches in Tsuen Wan have upgraded from “Very Poor” to “Poor”, while Pui O Beach has changed from “Good” to “Fair”. The total rainfall in the 2007 bathing season was lower than that in 2006 (1,650 mm versus 2,440 mm). This together with the long spell of sunny weather in July and early August have contributed favourably to the beach water quality. Continued improvements of sewage infrastructure and enforcement of environmental legislation have also helped reduce pollution and safeguard water quality of the beaches.

### Weekly Beach Grading in 2007

The EPD issues weekly gradings for gazetted beaches which are open for swimming. The information is disseminated to the public on [EPD’s website](#), the beach hotline, beach noticeboards and through weekly press releases.

In 2007, the water quality of Southern District beaches was highly satisfactory. All ten gazetted beaches received either a “Good” or “Fair” grading in the bathing season, except on one occasion when Big Wave Beach was rated as “Poor” after a heavy storm. South Bay and Turtle Cove Beaches had the best water quality, achieving a “Good” grading throughout the season. The water quality of Sai Kung beaches was also excellent. Trio Beach achieved a “Good” grading during the bathing season, while the other beaches were mostly “Good” or “Fair”. The water quality of the beaches in the Tuen Mun area was mostly graded as “Fair”. The gradings of the only open beach in Tsuen Wan (Ma Wan Tung Wan Beach) generally fluctuated between “Fair” and “Poor”. The beaches on the Outlying Islands were ideal for swimming. Three of the nine beaches, *i.e.* Lo So Shing, Tong Fuk and Upper



Aerial view of Ma Wan Tung Wan Beach and Tsing Ma Bridge





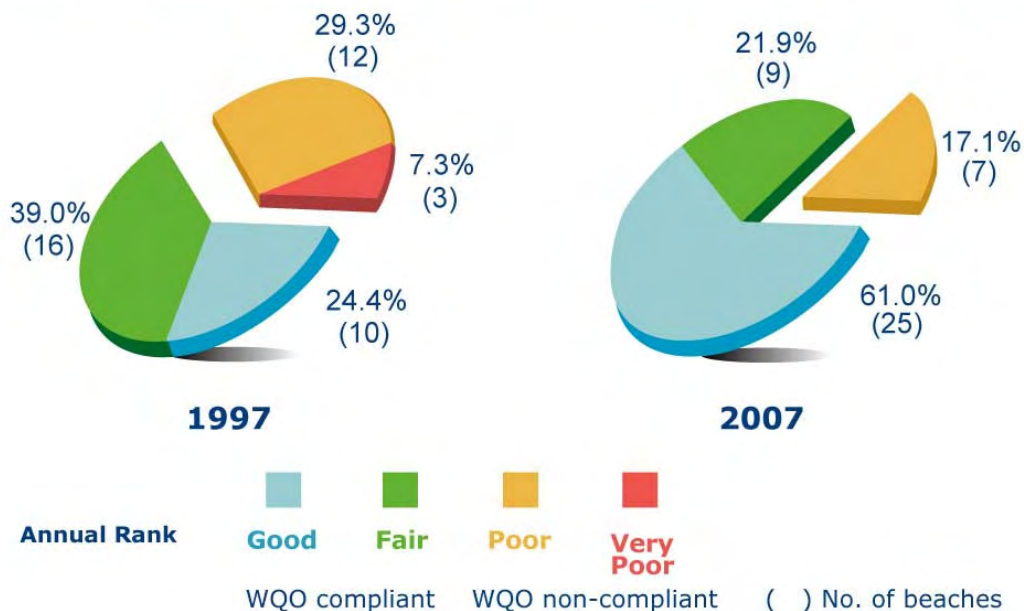
## Beach Water Quality in Hong Kong 2007

Cheung Sha Beaches, maintained a “Good” grading throughout the bathing season; whereas the other beaches were mostly “Good” or “Fair”.

### Long-term water quality trend

There has been a steady improvement of beach water quality in Hong Kong in the last decade. Out of the 41 gazetted beaches, those complying with the WQO have increased from 26 to 34 (63% to 83%) between 1997 and 2007. In the same period, the number of “Good” beaches has more than doubled from 10 to 25.

### Annual beach ranking of 1997 and 2007 compared



The overall WQO compliance rate has been maintained at above 80% since 1999. The advances made at Silver Mine Bay and Tuen Mun beaches were most noticeable as they have consistently complied with the WQO in recent years. The improvement was attributed to the enforcement of environmental legislation, extension of the sewerage network and enhanced sewage treatment facilities in the beach hinterlands.





## Measures to improve Tsuen Wan Beaches

Seven gazetted beaches in Tsuen Wan remained closed to swimmers in 2007 due to poor water quality. These were Anglers', Approach, Casam, Gemini, Hoi Mei Wan, Lido and Ting Kau Beaches. Although a slight improvement in the annual ranking of two beaches (Anglers' and Gemini Beaches) was observed in 2007, the overall water quality in the area was still unsatisfactory. This was due to pollution in the unsewered hinterlands and high background bacterial levels in the marine waters off Tsuen Wan coast.

To improve the water quality of Tsuen Wan beaches, the Government has started to implement the next stage of the Harbour Area Treatment Scheme ([HATS Stage 2A](#)), and plans to disinfect effluent from the Stonecutters Island Sewage Treatment Works by 2009. The extension of the public sewers and connections to unsewered villages along Castle Peak Road is on-going. With the proposed sewerage works and continuous pollution control efforts, the water quality in the area is expected to improve substantially in the next few years. This would pave the way for the early re-opening of Tsuen Wan beaches to the public for swimming.



Stonecutters Island Sewage Treatment Works is the largest of its kind in the world





## Beach Water Quality in Hong Kong 2007



Trio Beach in Sai Kung offers a scenic environment with excellent water quality

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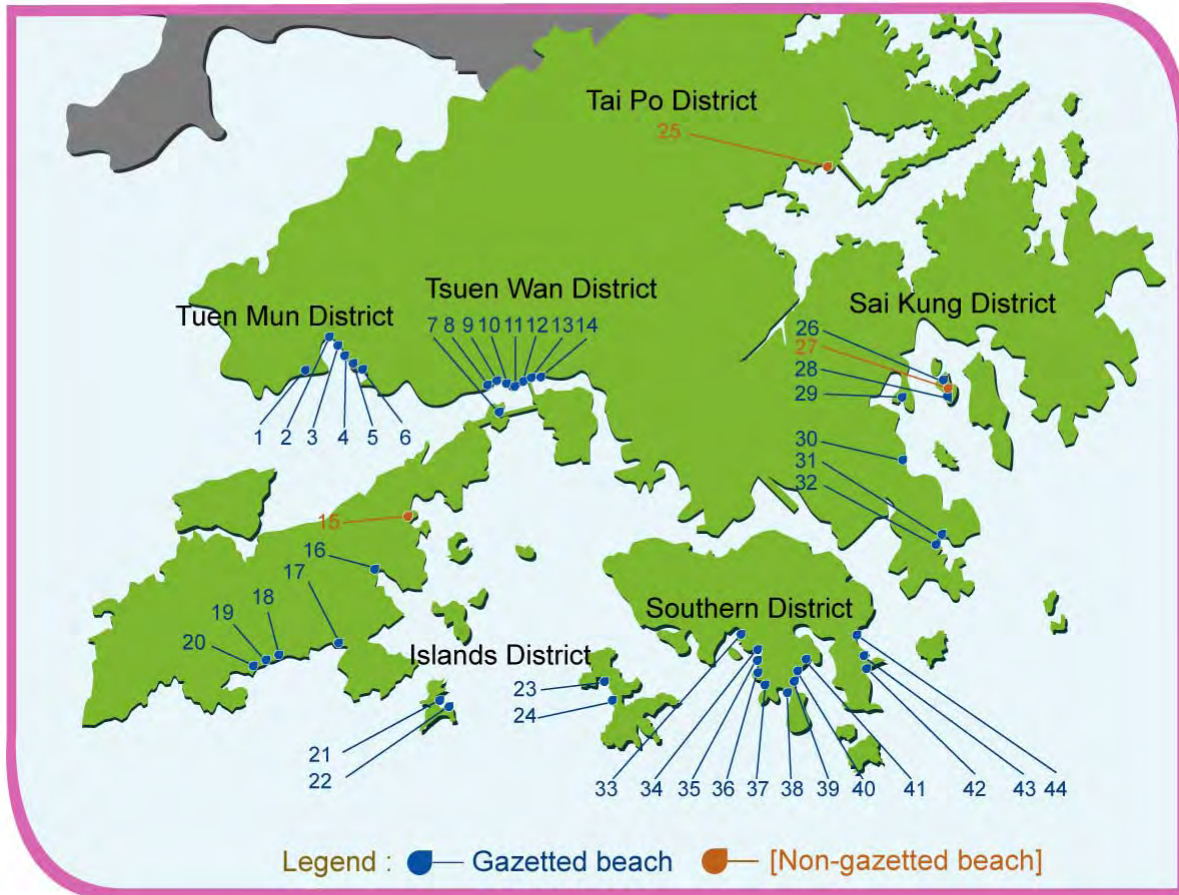






## The Monitoring Programme

### Beaches monitored by the EPD



#### Tuen Mun District

1. Butterfly
2. Castle Peak
3. Kadoorie
4. Cafeteria Old
5. Cafeteria New
6. Golden

#### Tsuen Wan District

7. Ma Wan Tung Wan
8. Anglers'
9. Gemini
10. Hoi Mei Wan
11. Casam
12. Lido
13. Ting Kau
14. Approach

#### Islands District

15. [Discovery Bay]
16. Silver Mine Bay
17. Pui O
18. Lower Cheung Sha
19. Upper Cheung Sha
20. Tong Fuk
21. Cheung Chau Tung Wan
22. Kwun Yam
23. Hung Shing Yeh
24. Lo So Shing

#### Tai Po District

25. [Lung Mei]

#### Sai Kung District

26. Kiu Tsui
27. [Kiu Tsui (New)]
28. Hap Mun Bay
29. Trio
30. Silverstrand
31. Clear Water Bay First
32. Clear Water Bay Second

#### Southern District

33. Deep Water Bay
34. Repulse Bay
35. Middle Bay
36. South Bay
37. Chung Hom Kok
38. St. Stephen's
39. Stanley Main
40. Hairpin
41. Turtle Cove
42. Shek O
43. Rocky Bay
44. Big Wave Bay

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## Beach monitoring frequencies

Beach	Monitoring frequency per month	
	Bathing season*	Non-bathing season
Gazetted beaches open all year round**	at least 3 times	at least 3 times
Other gazetted beaches	at least 3 times	once
Non-gazetted beaches	at least 3 times	once

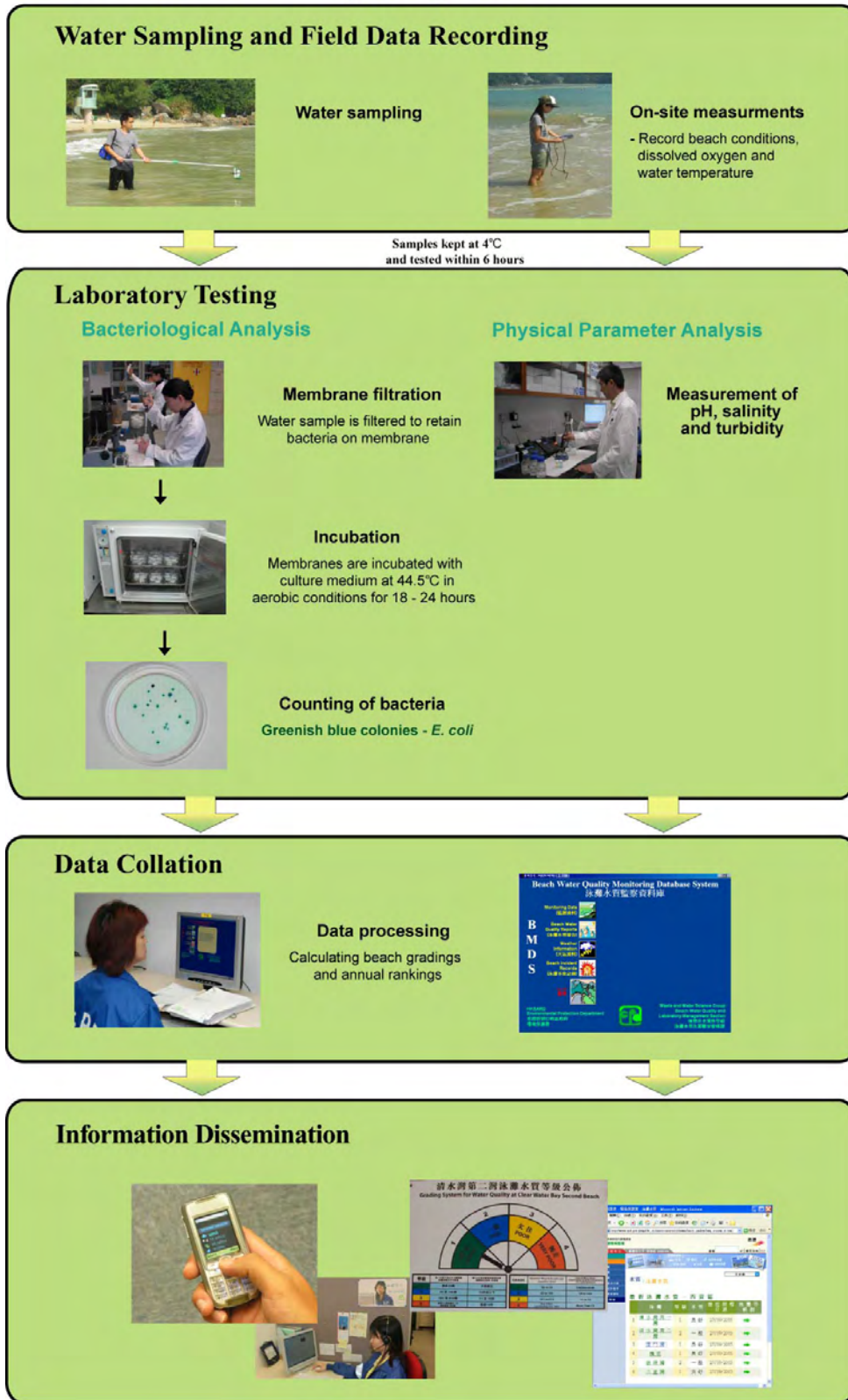
\* March to October

\*\* Clear Water Bay Second, Deep Water Bay, Golden and Silverstrand Beaches





## Overview of various stages of the Beach Monitoring Programme



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## Hong Kong's annual beach ranking system

Rank	<i>E. coli</i> counts per 100 mL*	Minor illness rate** (Cases per 1,000 swimmers)	WQO Compliance
Good	≤24	Undetectable	Compliant
Fair	25-180	≤10	
Poor	181-610	11-15	Non-compliant
Very Poor	>610	>15	

- \* Geometric mean *E. coli* count calculated based on all data collected between March and October.
- \*\* Skin and gastrointestinal illnesses

## Hong Kong's weekly beach grading system

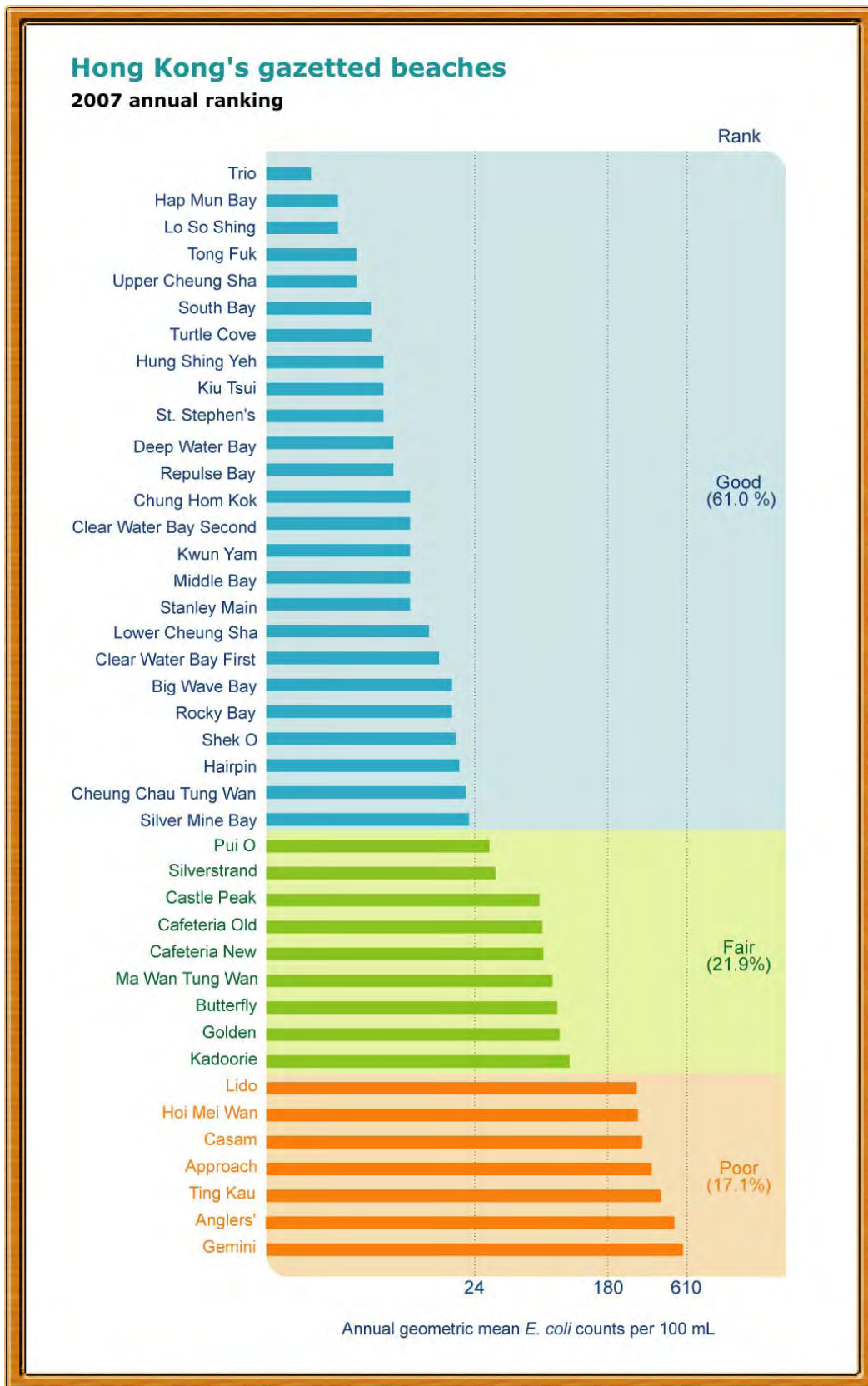
Grade	Beach water quality	<i>E. coli</i> counts per 100 mL*	Minor illness rate** (Cases per 1,000 swimmers)
1	Good	≤24	Undetectable
2	Fair	25-180	≤10
3	Poor	181-610	11-15
4	Very Poor	>610 or last reading >1,600	>15

- \* Unless otherwise indicated, the *E. coli* count represents the geometric mean of the 5 most recent sampling occasions.
- \*\* Skin and gastrointestinal illnesses





## The 2007 Findings

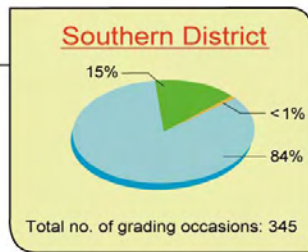
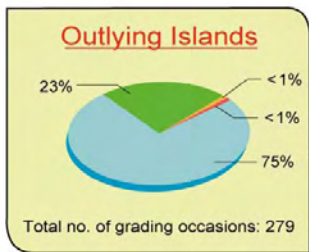
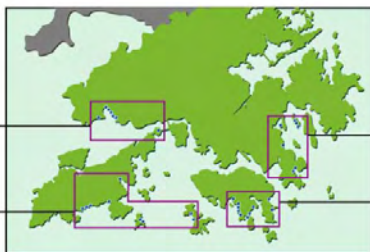
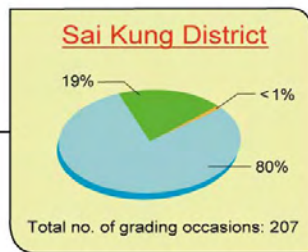
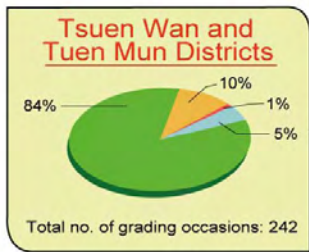


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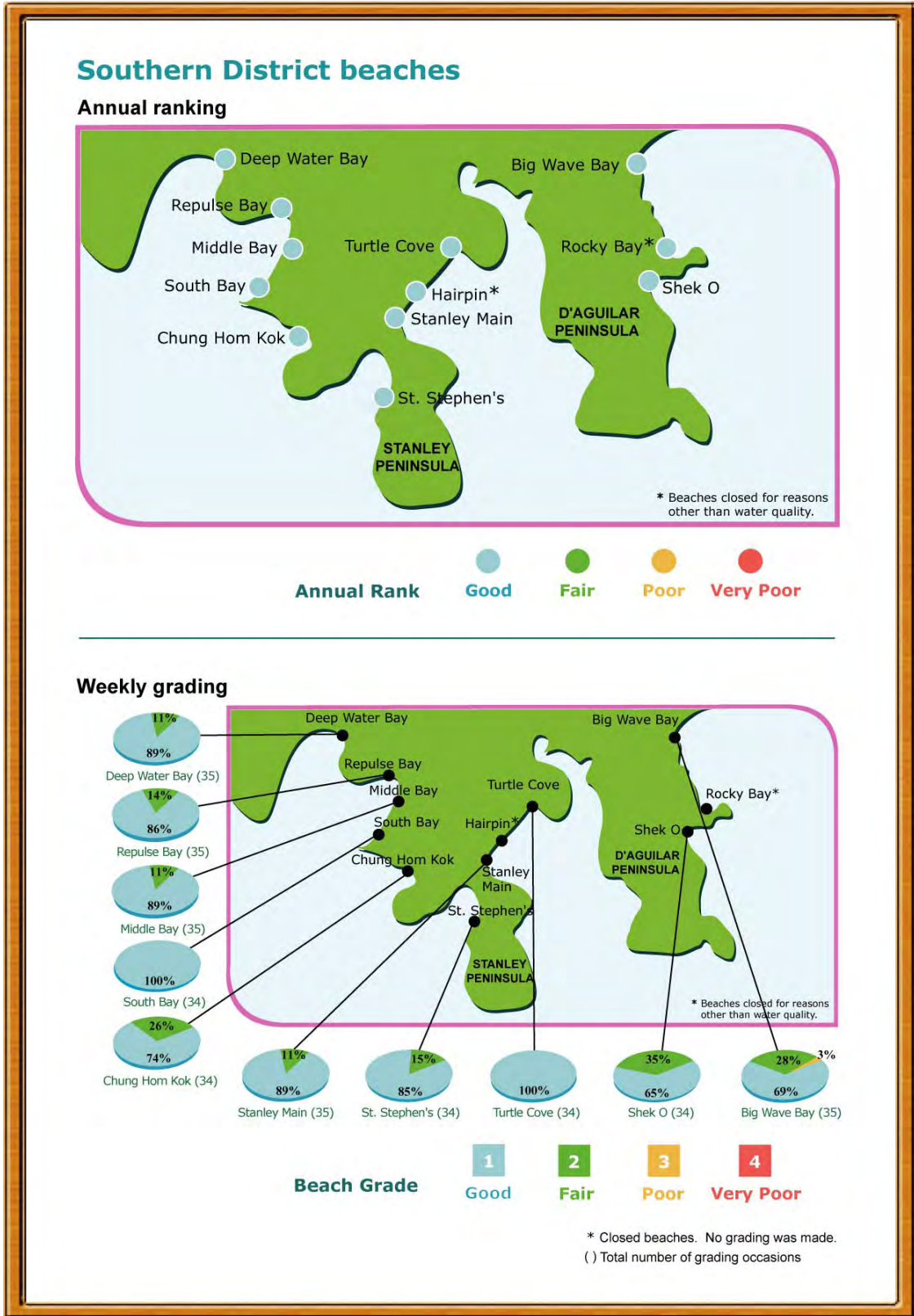


## Beach grading summary by district in 2007





## Ranking and Grading Summary (in 2007 Bathing Season)



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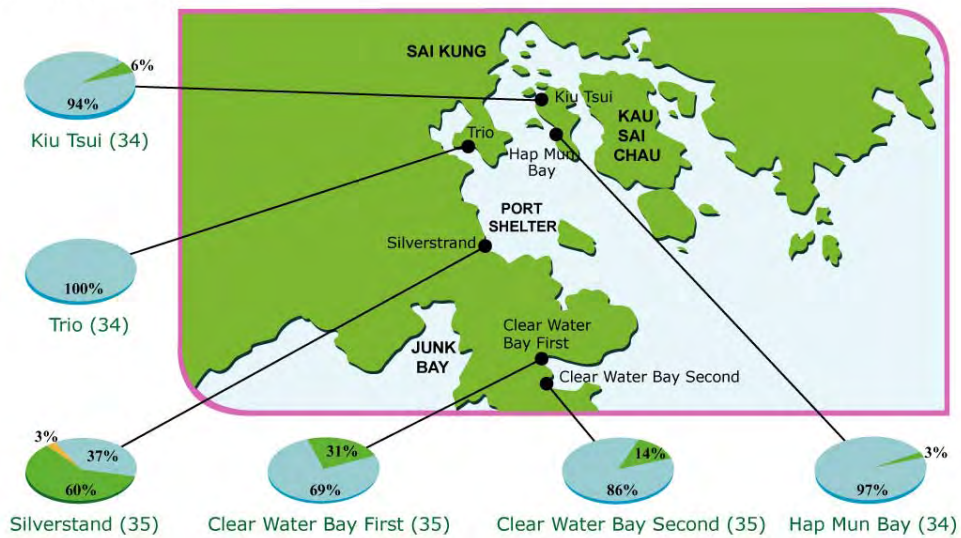


## Sai Kung beaches

### Annual ranking



### Weekly grading



( ) Total number of grading occasions

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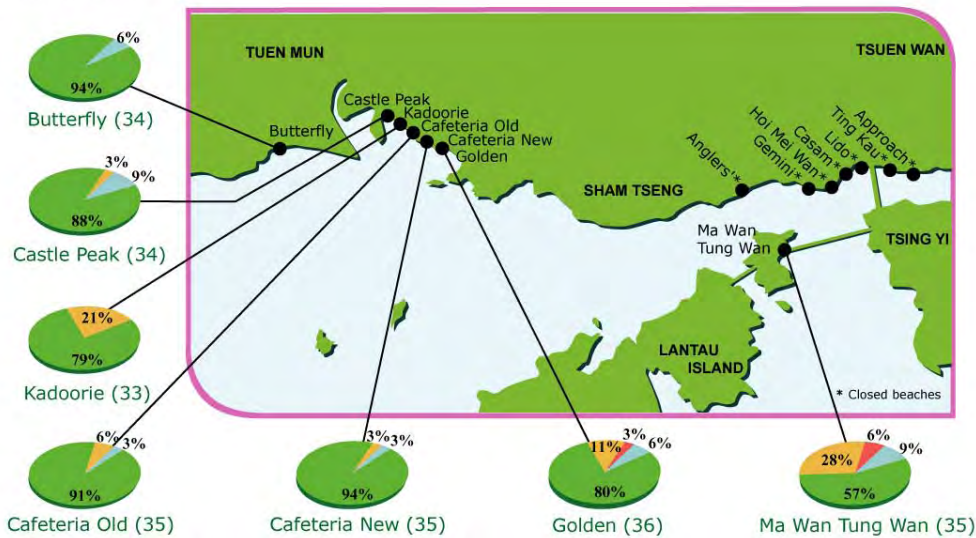


## Tsuen Wan and Tuen Mun Beaches

### Annual ranking



### Weekly grading



\* Closed beaches. No grading was made.  
( ) Total number of grading occasions

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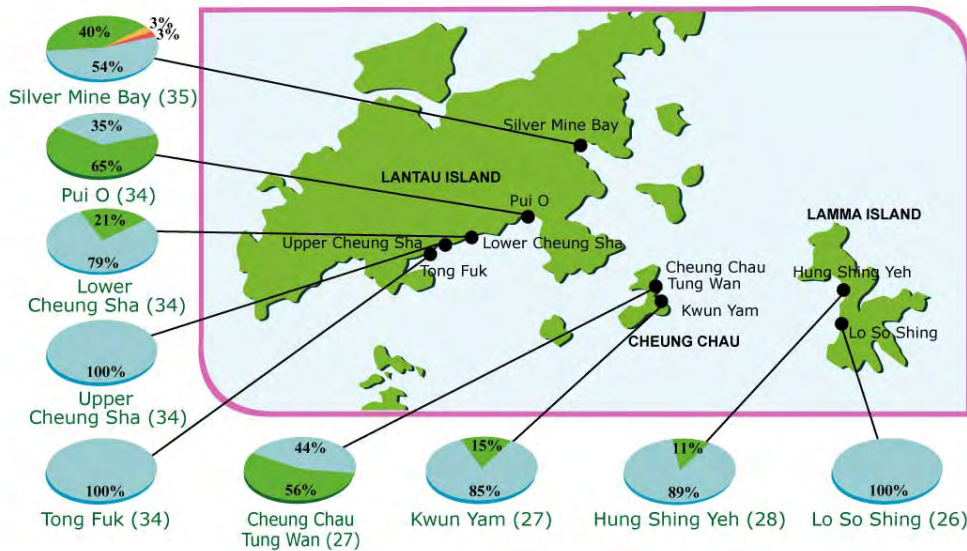
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## Outlying Islands beaches

### Annual ranking



### Weekly grading

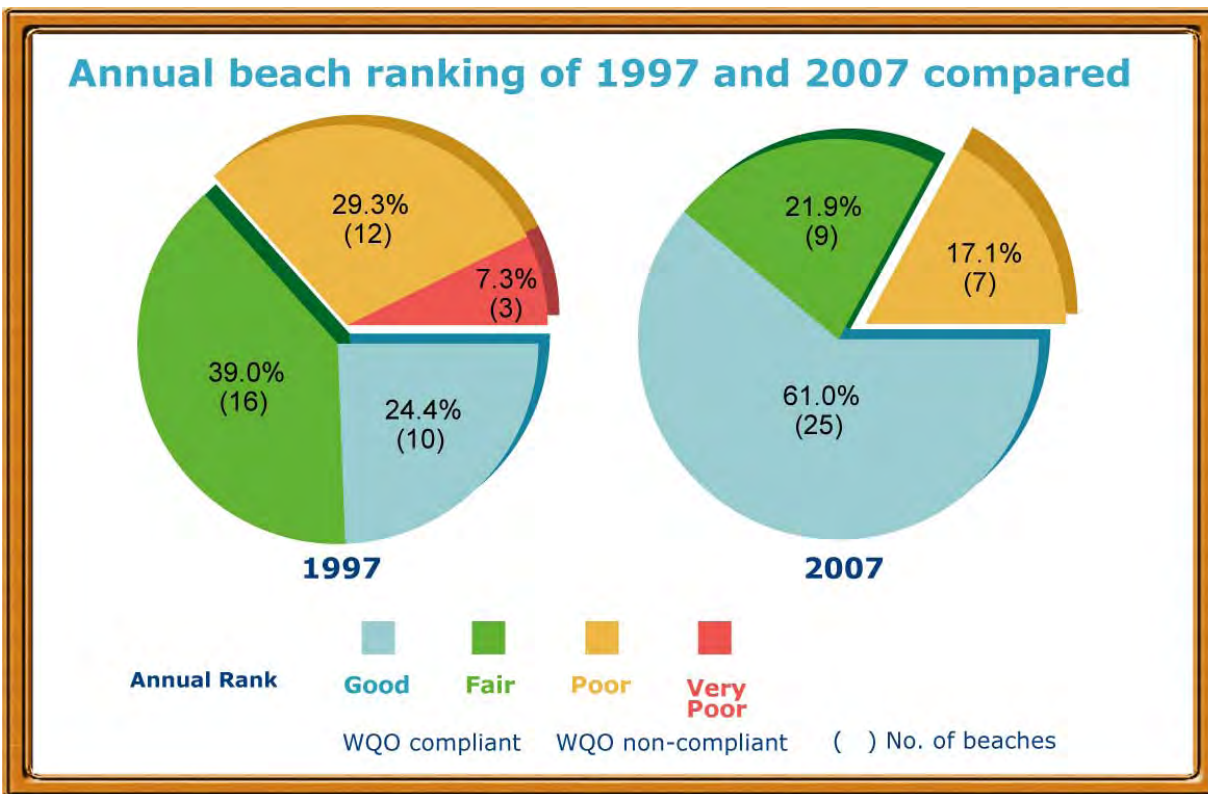
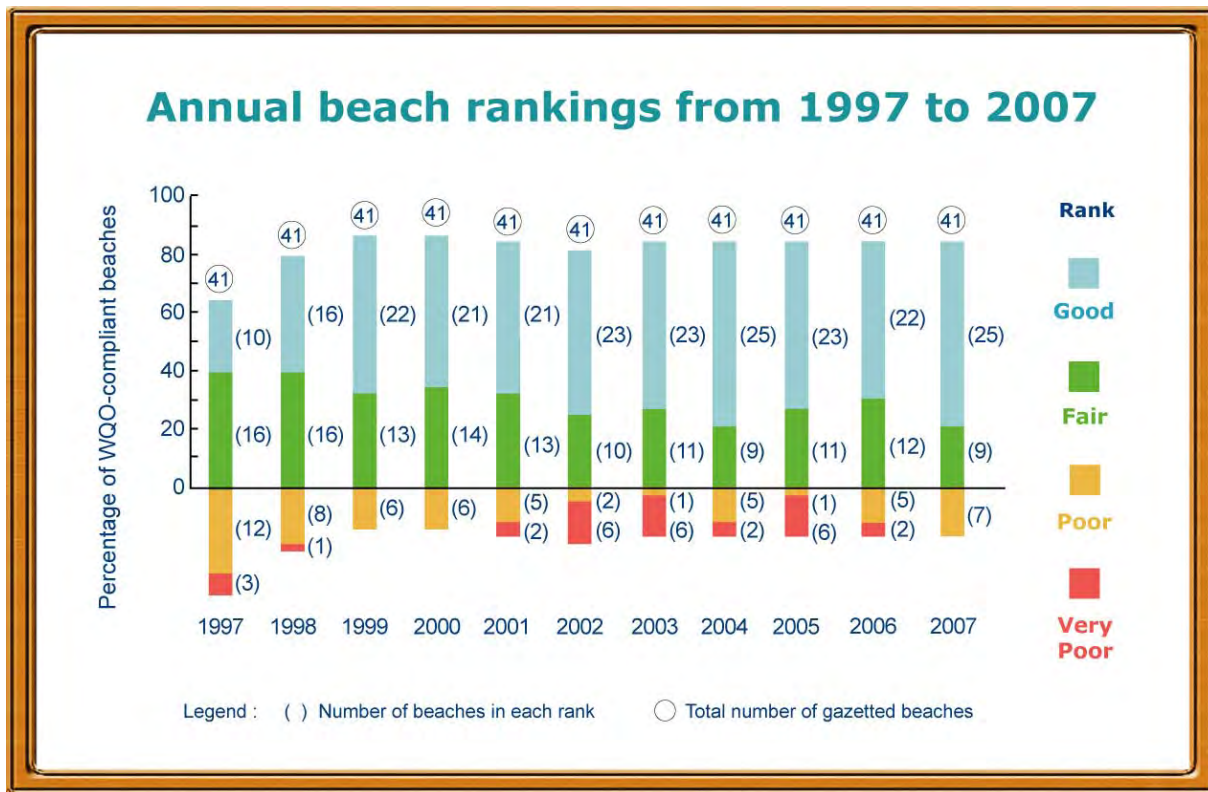


( ) Total number of grading occasions





## Long-term Trend (1997 – 2007)

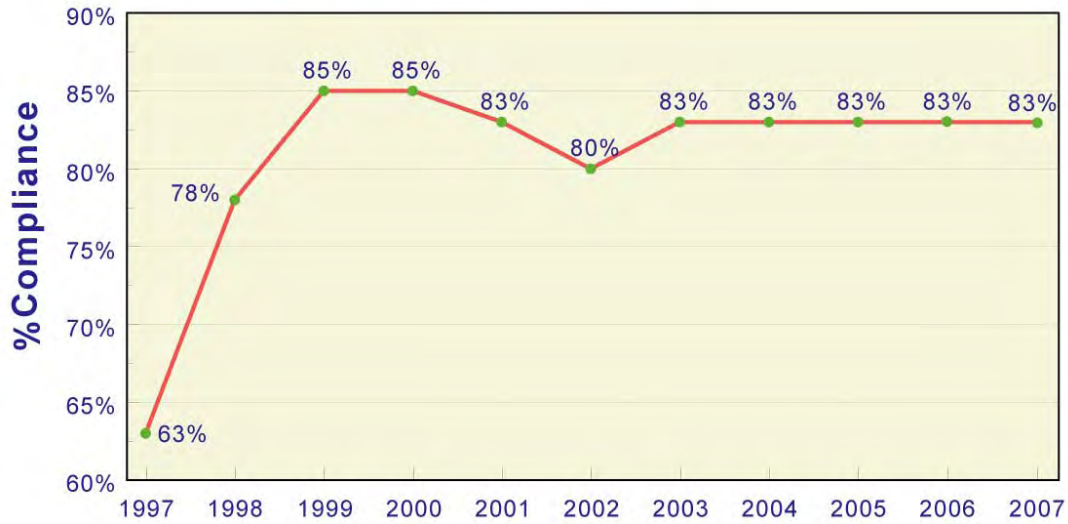


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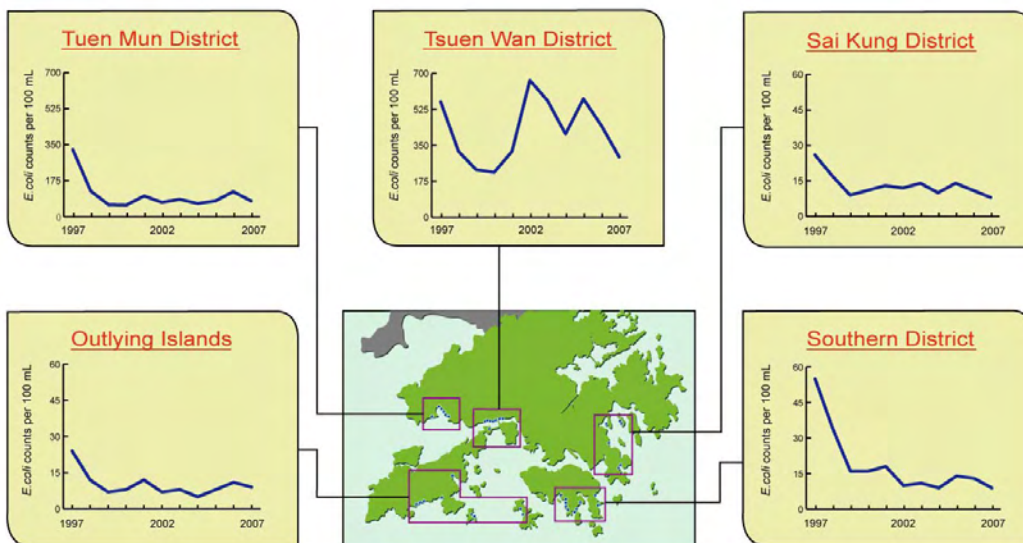




## Compliance with the Water Quality Objective at gazetted beaches, 1997 - 2007



## Annual geometric mean *E. coli* levels by district, 1997 - 2007



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## Appendix A – Annual geometric mean *E. coli* levels (1997 – 2007)

### Southern District

#### Annual geometric mean *E. coli* levels

Beach	<i>E. coli</i> counts per 100 mL										
	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Big Wave Bay	179	114	77	98	106	23	33	26	101	50	17
Chung Hom Kok	22	40	14	8	15	13	14	9	13	10	9
Deep Water Bay	55	46	14	16	18	9	9	7	8	7	7
Hairpin	44	72	17	18	10	6	7	7	13	11	19
Middle Bay	40	16	11	11	8	9	14	12	20	18	9
Repulse Bay	23	11	8	9	13	9	12	4	8	12	7
Rocky Bay	399	223	72	80	118	43	28	19	30	33	17
Shek O	102	70	32	29	31	13	11	16	19	24	18
South Bay	17	6	4	7	5	5	11	9	7	7	5
St. Stephen's	40	26	11	6	7	5	9	4	12	11	6
Stanley Main	72	24	13	12	9	8	6	5	7	10	9
Turtle Cove	40	14	12	11	15	8	4	5	8	7	5

Note: Figure in red indicates that the beach was closed in that year

### Sai Kung District

#### Annual geometric mean *E. coli* levels

Beach	<i>E. coli</i> counts per 100 mL										
	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Clear Water Bay First	62	41	11	16	28	28	17	9	16	20	14
Clear Water Bay Second	66	44	12	26	22	14	21	10	19	13	9
Hap Mun Bay	3	2	2	2	1	2	4	3	4	4	3
Kiu Tsui	5	4	4	5	5	4	5	17	14	11	6
Silverstrand	148	99	32	61	100	133	97	74	67	30	33
Trio	30	21	17	10	12	6	10	2	6	5	2





## Tsuen Wan District

### Annual geometric mean *E. coli* levels

Beach	<i>E. coli</i> counts per 100 mL										
	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Anglers'	691	502	442	326	621	1,169	693	619	895	772	496
Approach	1,009	435	387	316	411	696	762	470	663	599	352
Casam	609	239	231	209	233	741	702	594	716	426	305
Gemini	458	399	350	258	323	1,155	875	1,102	1,042	853	566
Hoi Mei Wan	471	280	109	177	199	547	442	287	641	308	286
Lido	600	262	231	181	269	683	734	523	782	459	280
Ma Wan Tung Wan	110	92	51	39	133	201	159	101	132	171	78
Ting Kau	1,583	1,045	515	593	739	742	831	412	512	469	405

Note: Figure in red indicates that the beach was closed in that year

## Tuen Mun District

### Annual geometric mean *E. coli* levels

Beach	<i>E. coli</i> counts per 100 mL										
	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Butterfly	259	121	44	61	74	60	74	55	55	94	84
Cafeteria New	309	100	60	51	104	62	80	54	70	120	68
Cafeteria Old	435	138	58	57	125	74	76	61	81	150	67
Castle Peak	332	199	57	58	105	58	64	80	90	139	64
Golden	352	98	44	50	87	66	84	46	62	117	87
Kadoorie	290	130	109	68	120	114	160	98	117	118	101

Note: Figure in red indicates that the beach was closed in that year





## Outlying Islands

### Annual geometric mean *E. coli* levels

Beach	<i>E. coli</i> counts per 100 mL										
	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Cheung Chau Tung Wan	24	19	11	12	16	17	11	12	14	37	21
Hung Shing Yeh	5	3	3	5	6	2	5	4	4	4	6
Kwun Yam	32	21	6	10	11	9	7	5	10	13	9
Lo So Shing	3	2	4	2	5	2	3	2	3	4	3
Lower Cheung Sha	85	23	10	12	22	10	14	7	12	11	12
Pui O	36	16	10	10	17	10	15	9	10	16	30
Silver Mine Bay	481	123	39	50	67	42	50	14	34	52	22
Tong Fuk	14	10	4	5	6	4	3	4	5	5	4
Upper Cheung Sha	8	3	2	3	5	3	3	3	3	4	4





## Appendix B – Beach visitor numbers, 2007

### Southern District

Visitor numbers during the 2007 bathing season

Beach	Daily average		Peak day	Peak month	Total
	Weekdays	Weekends & public holidays			
Big Wave Bay	203	1,122	3,100	28,800	123,297
Chung Hom Kok	311	1,226	3,700	26,580	149,375
Deep Water Bay	2,042	7,851	35,000	218,600	964,945
Hairpin	118	466	900	10,140	56,785
Middle Bay	53	362	1,400	10,030	37,750
Repulse Bay	7,593	13,892	95,000	420,520	2,364,156
Rocky Bay	-	-	-	-	-
Shek O	757	3,620	14,000	116,800	414,510
South Bay	117	905	3,000	22,000	91,720
St. Stephen's	219	482	1,350	13,850	74,708
Stanley Main	691	3,252	29,100	65,210	374,218
Turtle Cove	98	258	750	6,200	36,822

Note: Information provided by the Leisure and Cultural Services Department

### Sai Kung District

Visitor numbers during the 2007 bathing season

Beach	Daily average		Peak day	Peak month	Total
	Weekdays	Weekends & public holidays			
Clear Water Bay First	93	434	1,350	11,027	50,119
Clear Water Bay Second	2,239	8,569	51,500	259,700	1,054,900
Hap Mun Bay	253	2,738	14,980	74,107	260,724
Kiu Tsui	43	485	1,735	8,303	45,865
Silverstrand	198	1,045	10,080	26,893	116,287
Trio	255	805	3,050	31,090	106,585

Note: Information provided by the Leisure and Cultural Services Department







## Tsuen Wan District

### Visitor numbers during the 2007 bathing season

Beach	Daily average		Peak day	Peak month	Total
	Weekdays	Weekends & public holidays			
Anglers'	39	76	155	1,750	12,479
Approach	75	107	160	3,280	20,990
Casam	12	22	44	558	3,770
Gemini	3	8	16	190	1,122
Hoi Mei Wan	5	11	18	268	1,692
Lido	86	133	345	3,680	24,825
Ma Wan Tung Wan	215	1,293	7,875	32,711	138,881
Ting Kau	14	36	52	756	5,128

Note: Information provided by the Leisure and Cultural Services Department

## Tuen Mun District

### Visitor numbers during the 2007 bathing season

Beach	Daily average		Peak day	Peak month	Total
	Weekdays	Weekends & public holidays			
Butterfly	820	1,454	3,400	36,230	251,660
Cafeteria New	690	2,039	5,090	61,770	276,935
Cafeteria Old	576	1,512	4,820	37,940	215,960
Castle Peak	450	1,170	2,700	23,700	167,800
Golden	1,868	5,508	11,500	118,400	748,800
Kadoorie	519	825	2,000	29,000	151,630

Note: Information provided by the Leisure and Cultural Services Department





## Outlying Islands

Visitor numbers during the 2007 bathing season

Beach	Daily average				
	Weekdays	Weekends & public holidays	Peak day	Peak month	Total
Cheung Chau Tung Wan	183	578	3,700	16,460	76,350
Hung Shing Yeh	165	586	1,550	14,430	74,020
Kwun Yam	53	138	400	4,030	19,806
Lo So Shing	41	132	370	2,400	17,340
Lower Cheung Sha	59	171	410	5,130	23,430
Pui O	101	448	1,450	13,930	52,570
Silver Mine Bay	76	214	2,600	5,850	29,670
Tong Fuk	93	203	570	7,490	31,540
Upper Cheung Sha	79	143	920	4,100	24,520

Note: Information provided by the Leisure and Cultural Services Department





## Appendix C – Physicochemical water quality data of gazetted beaches, 2007

### Southern District : summary of physicochemical water quality data of gazetted beaches, 2007

Beach	pH	Salinity (psu) <sup>1</sup>	Turbidity (NTU) <sup>2</sup>	Temperature (°C)	Dissolved Oxygen (mg/L) (% Saturation)	
Big Wave Bay	8.2 ( 8.0 - 8.6 )	30.7 ( 24.0 - 33.6 )	3.7 ( 0.9 - 24.5 )	26.0 ( 19.2 - 30.0 )	7.0 ( 6.2 - 9.2 )	98 ( 86 - 130 )
Chung Hom Kok	8.2 ( 8.0 - 8.7 )	30.1 ( 21.3 - 33.6 )	4.2 ( 1.1 - 18.9 )	26.3 ( 19.6 - 30.0 )	6.7 ( 4.8 - 9.2 )	95 ( 69 - 130 )
Deep Water Bay	8.2 ( 7.9 - 8.6 )	29.4 ( 20.2 - 33.7 )	7.2 ( 1.8 - 26.7 )	26.8 ( 20.5 - 31.0 )	6.5 ( 4.2 - 8.4 )	95 ( 70 - 127 )
Hairpin [Closed]	8.3 ( 8.0 - 8.7 )	30.5 ( 20.3 - 33.3 )	3.4 ( 0.7 - 21.6 )	26.6 ( 19.6 - 31.7 )	6.8 ( 5.6 - 8.4 )	100 ( 75 - 126 )
Middle Bay	8.2 ( 8.0 - 8.8 )	29.8 ( 20.6 - 33.7 )	5.4 ( 1.4 - 22.5 )	26.4 ( 20.0 - 30.5 )	6.9 ( 5.0 - 9.4 )	96 ( 71 - 133 )
Repulse Bay	8.2 ( 7.9 - 8.7 )	30.2 ( 21.4 - 33.6 )	5.3 ( 1.4 - 19.7 )	26.3 ( 19.5 - 30.3 )	6.9 ( 5.7 - 9.2 )	98 ( 75 - 135 )
Rocky Bay [Closed]	8.2 ( 8.0 - 8.5 )	31.6 ( 27.0 - 33.3 )	3.2 ( 0.8 - 21.2 )	25.6 ( 19.1 - 30.0 )	6.6 ( 5.1 - 7.6 )	95 ( 74 - 118 )
Shek O	8.2 ( 8.0 - 8.6 )	31.4 ( 26.5 - 33.6 )	4.5 ( 1.2 - 33.1 )	26.1 ( 19.2 - 31.1 )	6.8 ( 6.0 - 9.2 )	97 ( 82 - 130 )
South Bay	8.2 ( 7.9 - 8.8 )	30.1 ( 21.0 - 33.6 )	3.4 ( 1.1 - 13.3 )	26.4 ( 19.6 - 31.0 )	6.8 ( 5.4 - 9.4 )	98 ( 68 - 142 )
St. Stephen's	8.2 ( 8.0 - 8.7 )	30.0 ( 20.9 - 33.6 )	4.0 ( 1.0 - 17.7 )	26.3 ( 19.5 - 30.1 )	6.7 ( 4.8 - 9.4 )	96 ( 74 - 140 )
Stanley Main	8.3 ( 8.0 - 8.7 )	30.1 ( 22.5 - 33.2 )	4.4 ( 1.2 - 26.7 )	26.8 ( 19.8 - 31.7 )	7.1 ( 5.7 - 9.2 )	101 ( 86 - 130 )
Turtle Cove	8.3 ( 8.0 - 8.7 )	30.2 ( 23.5 - 33.7 )	5.9 ( 1.2 - 45.2 )	26.7 ( 19.4 - 31.1 )	6.7 ( 4.8 - 8.4 )	96 ( 70 - 124 )

1. Practical Salinity Unit ; 2. Nephelometric Turbidity Unit  
Note: Data presented are arithmetic means; figures in brackets are ranges.

### Sai Kung District : summary of physicochemical water quality data of gazetted beaches, 2007

Beach	pH	Salinity (psu) <sup>1</sup>	Turbidity (NTU) <sup>2</sup>	Temperature (°C)	Dissolved Oxygen (mg/L) (% Saturation)	
Clear Water Bay First	8.2 ( 8.0 - 8.6 )	31.2 ( 24.2 - 33.6 )	5.1 ( 0.8 - 23.8 )	26.6 ( 19.0 - 31.6 )	6.6 ( 5.6 - 7.8 )	95 ( 85 - 109 )
Clear Water Bay Second	8.2 ( 8.0 - 8.6 )	31.7 ( 24.4 - 33.7 )	5.3 ( 1.3 - 24.8 )	26.7 ( 19.3 - 31.7 )	6.6 ( 4.7 - 7.8 )	94 ( 65 - 115 )
Hap Mun Bay	8.2 ( 8.1 - 8.5 )	31.7 ( 25.6 - 33.5 )	2.7 ( 0.5 - 8.6 )	26.9 ( 18.6 - 32.4 )	6.4 ( 5.4 - 7.4 )	94 ( 82 - 104 )
Kiu Tsui	8.2 ( 8.0 - 8.5 )	31.4 ( 25.7 - 33.4 )	2.1 ( 0.5 - 7.3 )	27.0 ( 18.7 - 32.7 )	6.6 ( 5.3 - 7.9 )	97 ( 82 - 118 )
Silverstrand	8.2 ( 7.9 - 8.5 )	30.6 ( 25.5 - 33.3 )	4.1 ( 0.9 - 21.1 )	26.7 ( 18.8 - 31.5 )	6.6 ( 5.2 - 8.1 )	96 ( 80 - 112 )
Trio	8.2 ( 8.0 - 8.7 )	30.8 ( 20.4 - 33.4 )	2.0 ( 0.5 - 5.8 )	27.1 ( 18.6 - 32.2 )	6.3 ( 4.5 - 7.2 )	94 ( 68 - 110 )

1. Practical Salinity Unit ; 2. Nephelometric Turbidity Unit  
Note: Data presented are arithmetic means; figures in brackets are ranges.





## Tsuen Wan District : summary of physicochemical water quality data of gazetted beaches, 2007

Beach	pH	Salinity (psu) <sup>1</sup>	Turbidity (NTU) <sup>2</sup>	Temperature (°C)	Dissolved Oxygen (mg/L) (% Saturation)	
<i>Anglers' [Closed]</i>	8.1 ( 7.9 - 8.6 )	27.5 ( 14.2 - 32.2 )	6.5 ( 1.6 - 24.6 )	26.1 ( 19.1 - 31.3 )	6.6 ( 4.2 - 8.8 )	92 ( 54 - 119 )
<i>Approach [Closed]</i>	8.1 ( 7.9 - 8.5 )	26.7 ( 17.6 - 32.2 )	6.2 ( 2.5 - 23.4 )	26.0 ( 19.2 - 29.8 )	6.5 ( 4.2 - 9.1 )	93 ( 58 - 128 )
<i>Casam [Closed]</i>	8.1 ( 7.9 - 8.5 )	27.2 ( 18.5 - 32.1 )	6.9 ( 1.7 - 30.6 )	26.4 ( 19.0 - 29.7 )	6.7 ( 4.3 - 9.3 )	93 ( 65 - 120 )
<i>Gemini [Closed]</i>	8.1 ( 7.9 - 8.6 )	27.9 ( 14.8 - 32.2 )	7.0 ( 2.1 - 49.3 )	26.2 ( 19.0 - 32.4 )	6.5 ( 4.0 - 8.8 )	93 ( 64 - 124 )
<i>Hoi Mei Wan [Closed]</i>	8.1 ( 7.9 - 8.6 )	27.0 ( 17.3 - 32.1 )	5.7 ( 2.0 - 31.4 )	26.5 ( 19.2 - 30.3 )	6.4 ( 3.8 - 8.6 )	92 ( 50 - 127 )
<i>Lido [Closed]</i>	8.1 ( 7.9 - 8.5 )	27.2 ( 18.3 - 32.1 )	6.4 ( 1.1 - 24.3 )	26.4 ( 19.2 - 30.0 )	6.7 ( 4.9 - 10.0 )	95 ( 71 - 129 )
<i>Ma Wan Tung Wan</i>	8.1 ( 7.9 - 8.5 )	28.5 ( 21.3 - 32.9 )	9.4 ( 2.4 - 28.6 )	26.5 ( 18.9 - 31.6 )	6.5 ( 5.0 - 8.5 )	93 ( 65 - 130 )
<i>Ting Kau [Closed]</i>	8.2 ( 7.9 - 8.6 )	26.7 ( 18.5 - 32.0 )	8.1 ( 1.4 - 51.8 )	26.3 ( 19.2 - 30.3 )	6.7 ( 4.1 - 10.0 )	93 ( 52 - 128 )

1. Practical Salinity Unit ; 2. Nephelometric Turbidity Unit  
Note: Data presented are arithmetic means; figures in brackets are ranges.

## Tuen Mun District : summary of physicochemical water quality data of gazetted beaches, 2007

Beach	pH	Salinity (psu) <sup>1</sup>	Turbidity (NTU) <sup>2</sup>	Temperature (°C)	Dissolved Oxygen (mg/L) (% Saturation)	
<i>Butterfly</i>	8.1 ( 7.8 - 8.7 )	24.5 ( 12.2 - 32.1 )	14.2 ( 3.3 - 52.3 )	27.1 ( 19.1 - 32.0 )	6.5 ( 5.3 - 10.3 )	93 ( 69 - 138 )
<i>Cafeteria New</i>	8.1 ( 7.8 - 8.8 )	24.2 ( 10.7 - 31.8 )	15.2 ( 5.7 - 65.1 )	26.7 ( 18.8 - 31.0 )	6.5 ( 4.2 - 7.7 )	92 ( 62 - 109 )
<i>Cafeteria Old</i>	8.1 ( 7.8 - 8.8 )	24.1 ( 10.7 - 31.8 )	12.2 ( 4.3 - 35.3 )	26.7 ( 19.1 - 30.9 )	6.4 ( 3.5 - 7.7 )	92 ( 56 - 104 )
<i>Castle Peak</i>	8.1 ( 7.8 - 8.7 )	23.9 ( 10.5 - 31.6 )	9.2 ( 3.3 - 56.3 )	27.2 ( 19.3 - 33.0 )	6.6 ( 4.5 - 8.9 )	96 ( 65 - 128 )
<i>Golden</i>	8.1 ( 7.8 - 8.8 )	24.4 ( 10.5 - 31.9 )	16.3 ( 5.5 - 42.8 )	26.6 ( 18.8 - 31.0 )	6.5 ( 4.0 - 7.7 )	92 ( 61 - 108 )
<i>Kadoorie</i>	8.1 ( 7.8 - 8.8 )	23.9 ( 10.6 - 32.0 )	10.9 ( 4.0 - 36.2 )	27.1 ( 18.9 - 32.0 )	7.9 ( 5.5 - 10.3 )	95 ( 76 - 140 )

1. Practical Salinity Unit ; 2. Nephelometric Turbidity Unit  
Note: Data presented are arithmetic means; figures in brackets are ranges.





## Outlying Islands :

### summary of physicochemical water quality data of gazetted beaches, 2007

Beach	pH	Salinity (psu) <sup>1</sup>	Turbidity (NTU) <sup>2</sup>	Temperature (°C)	Dissolved Oxygen (mg/L) (% Saturation)	
<i>Cheung Chau Tung Wan</i>	8.2 ( 7.9 - 8.6 )	28.9 ( 22.3 - 32.7 )	5.3 ( 1.2 - 18.2 )	26.0 ( 17.6 - 29.8 )	6.8 ( 5.5 - 8.6 )	97 ( 75 - 129 )
<i>Hung Shing Yeh</i>	8.2 ( 8.0 - 8.6 )	29.4 ( 18.4 - 33.5 )	8.5 ( 1.6 - 32.4 )	26.4 ( 18.4 - 31.3 )	6.8 ( 5.4 - 7.6 )	96 ( 87 - 105 )
<i>Kwun Yam</i>	8.2 ( 7.7 - 8.7 )	28.7 ( 21.7 - 32.7 )	5.1 ( 1.2 - 16.2 )	25.9 ( 17.9 - 29.8 )	6.9 ( 4.7 - 8.9 )	99 ( 65 - 130 )
<i>Lo So Shing</i>	8.2 ( 8.0 - 8.7 )	29.3 ( 19.4 - 33.6 )	6.2 ( 1.3 - 37.6 )	26.2 ( 20.6 - 30.3 )	6.7 ( 5.6 - 7.9 )	95 ( 75 - 115 )
<i>Lower Cheung Sha</i>	8.2 ( 8.0 - 8.8 )	28.7 ( 18.9 - 32.9 )	13.7 ( 2.9 - 56.2 )	27.1 ( 18.6 - 32.0 )	6.7 ( 5.0 - 7.5 )	96 ( 71 - 109 )
<i>Pui O</i>	8.2 ( 7.9 - 8.7 )	28.3 ( 16.1 - 32.9 )	18.0 ( 5.1 - 53.6 )	27.6 ( 18.4 - 33.3 )	6.5 ( 4.9 - 7.3 )	94 ( 70 - 108 )
<i>Silver Mine Bay</i>	8.2 ( 7.9 - 8.7 )	26.5 ( 10.7 - 32.5 )	13.2 ( 2.9 - 69.5 )	27.9 ( 18.5 - 32.9 )	6.4 ( 4.2 - 8.0 )	92 ( 61 - 130 )
<i>Tong Fuk</i>	8.2 ( 8.0 - 8.6 )	29.1 ( 19.5 - 33.0 )	10.8 ( 1.3 - 40.4 )	26.9 ( 18.6 - 30.6 )	6.8 ( 5.5 - 7.7 )	96 ( 69 - 112 )
<i>Upper Cheung Sha</i>	8.2 ( 8.0 - 8.6 )	28.9 ( 20.3 - 33.0 )	16.6 ( 3.2 - 56.3 )	26.9 ( 18.4 - 30.8 )	6.8 ( 5.6 - 7.7 )	96 ( 79 - 108 )

1. Practical Salinity Unit ; 2. Nephelometric Turbidity Unit

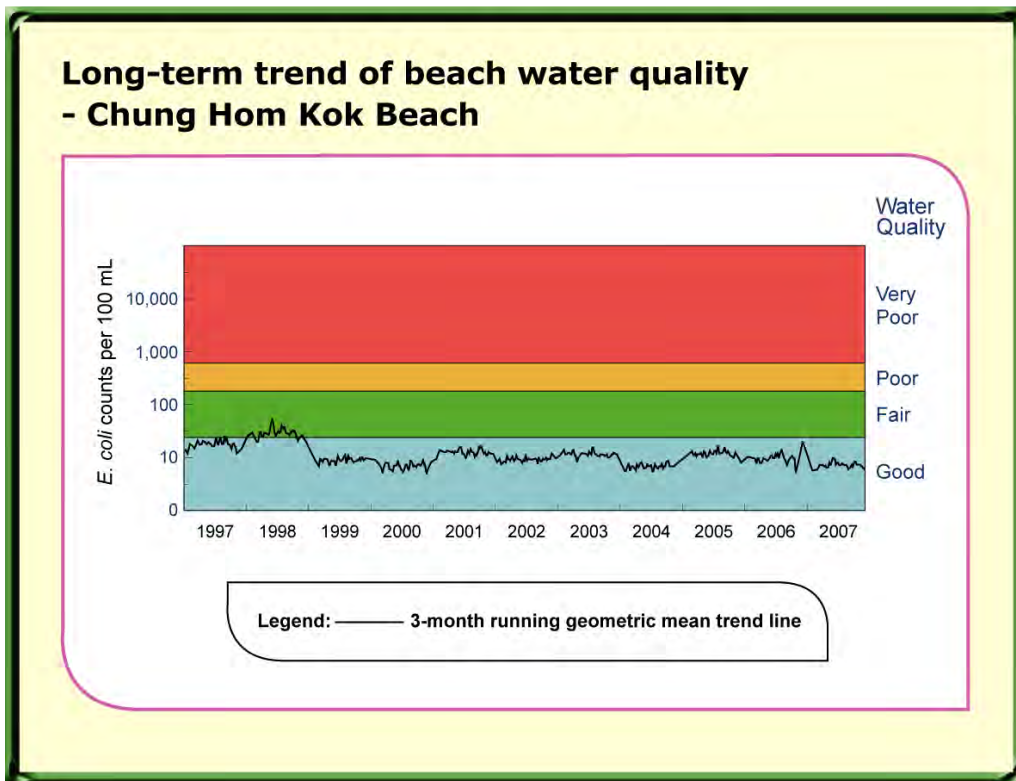
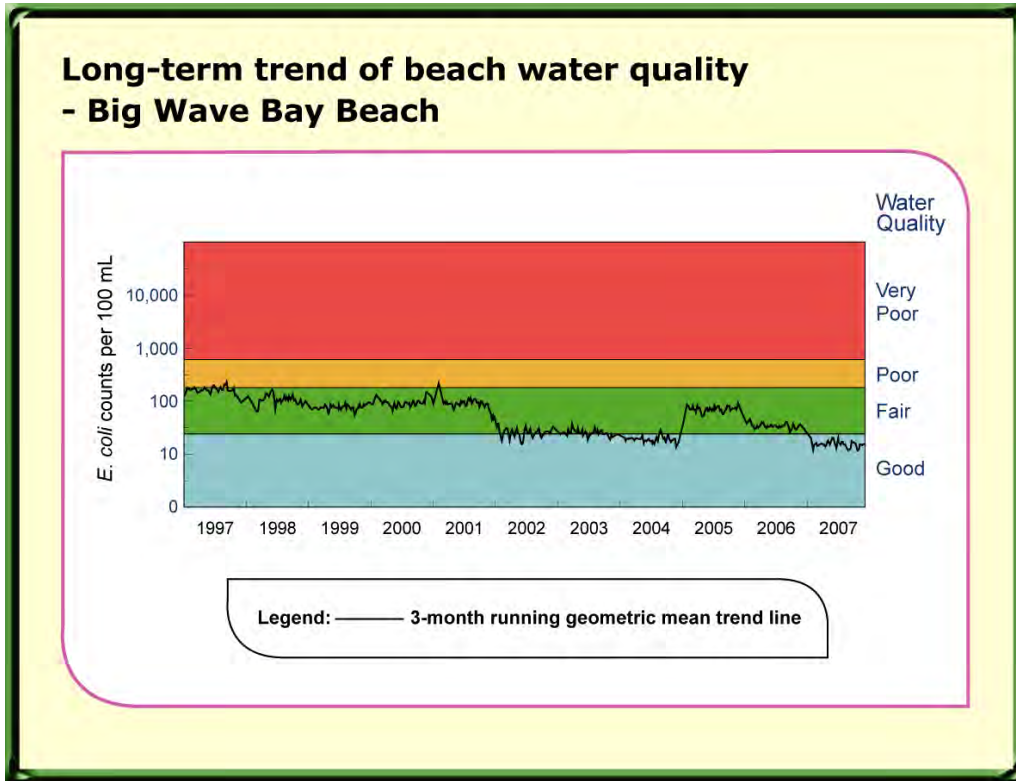
Note: Data presented are arithmetic means; figures in brackets are ranges.





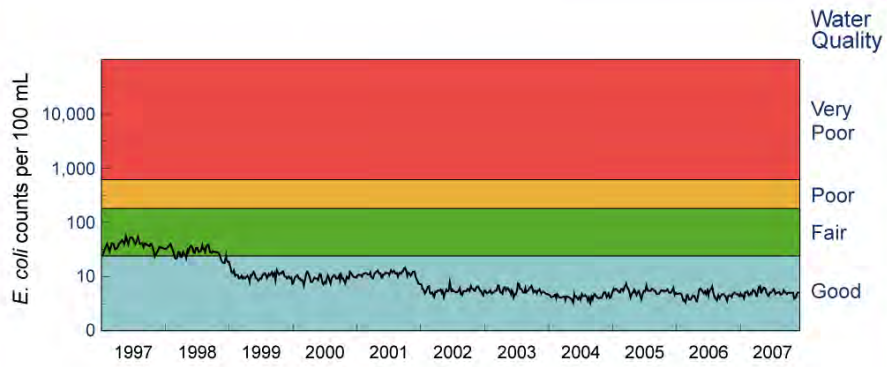
## Appendix D – Long-term trend of beach water quality (1997 – 2007) - Southern District

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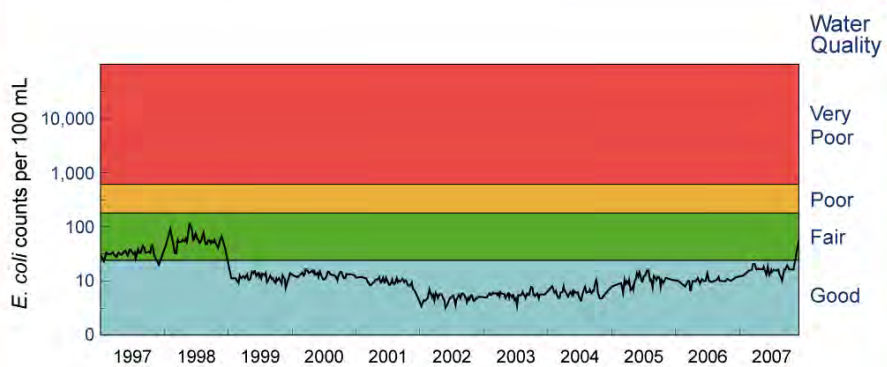


## Long-term trend of beach water quality - Deep Water Bay Beach



Legend: — 3-month running geometric mean trend line

## Long-term trend of beach water quality - Hairpin Beach

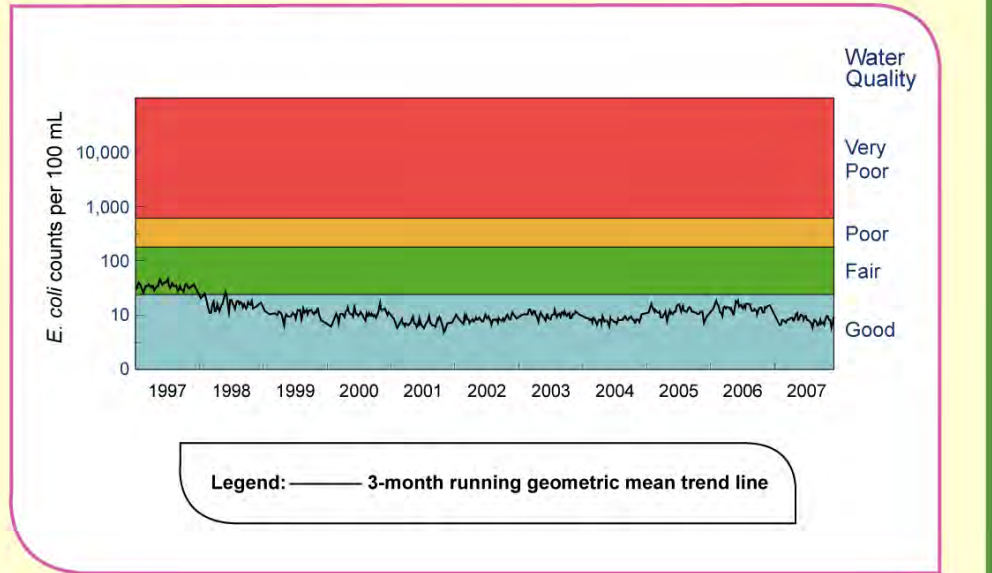


Legend: — 3-month running geometric mean trend line

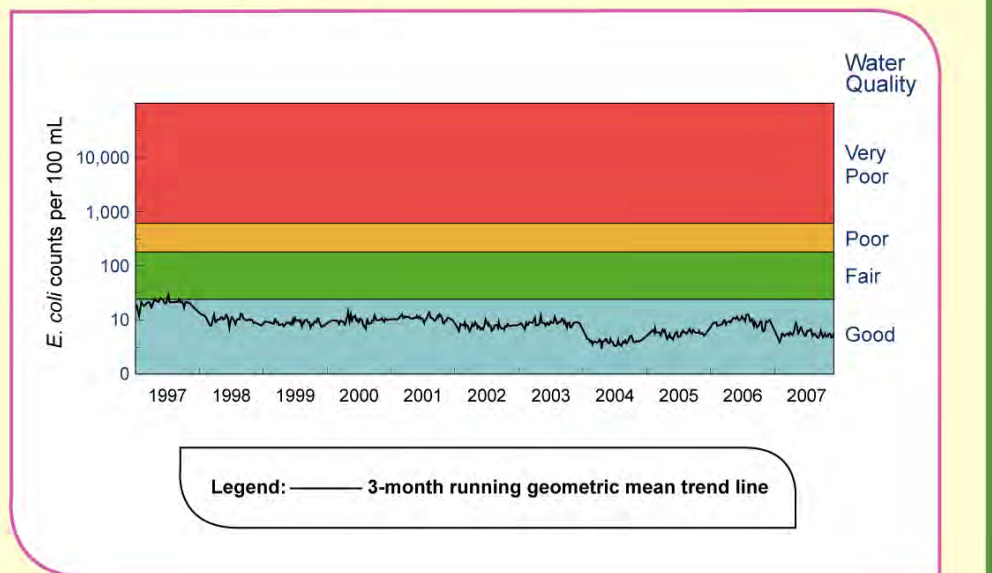




## Long-term trend of beach water quality - Middle Bay Beach



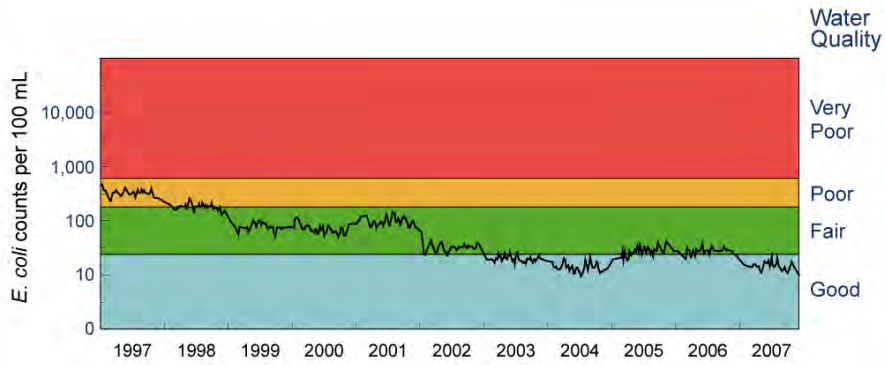
## Long-term trend of beach water quality - Repulse Bay Beach





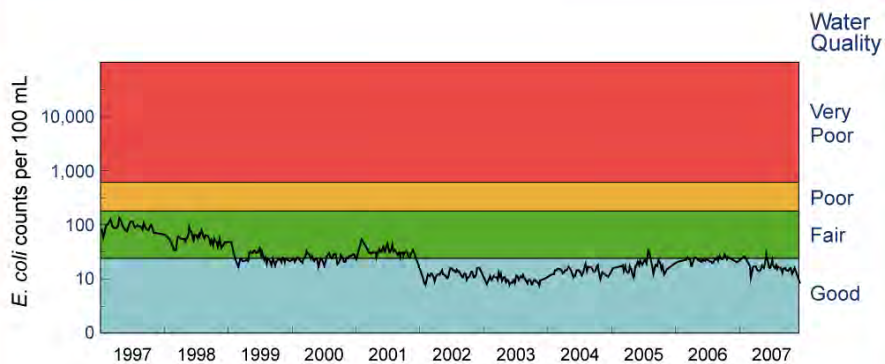


## Long-term trend of beach water quality - Rocky Bay Beach



Legend: — 3-month running geometric mean trend line

## Long-term trend of beach water quality - Shek O Beach

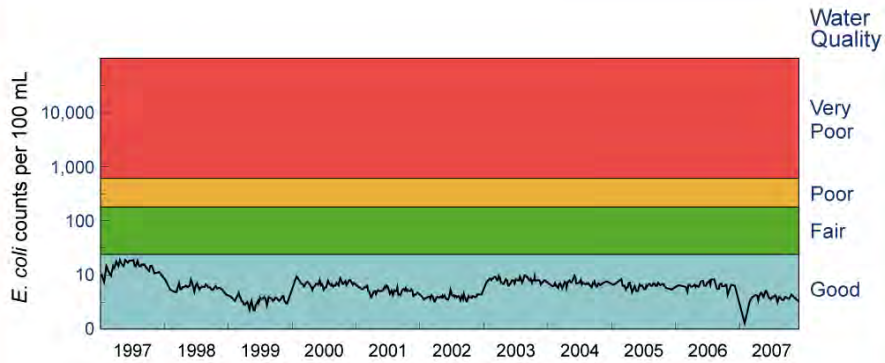


Legend: — 3-month running geometric mean trend line



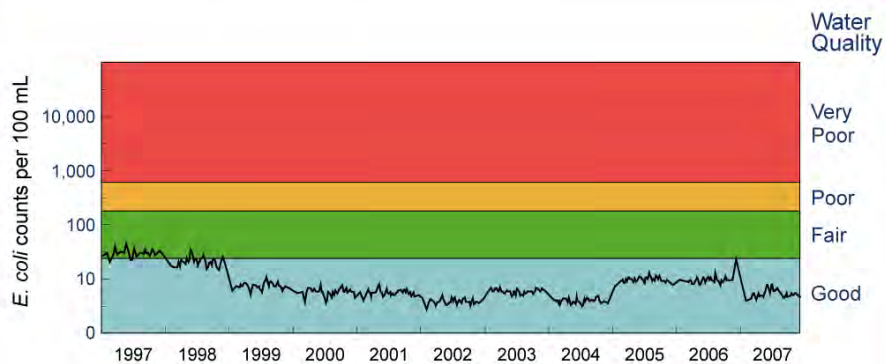


## Long-term trend of beach water quality - South Bay Beach



Legend: — 3-month running geometric mean trend line

## Long-term trend of beach water quality - St. Stephen's Beach

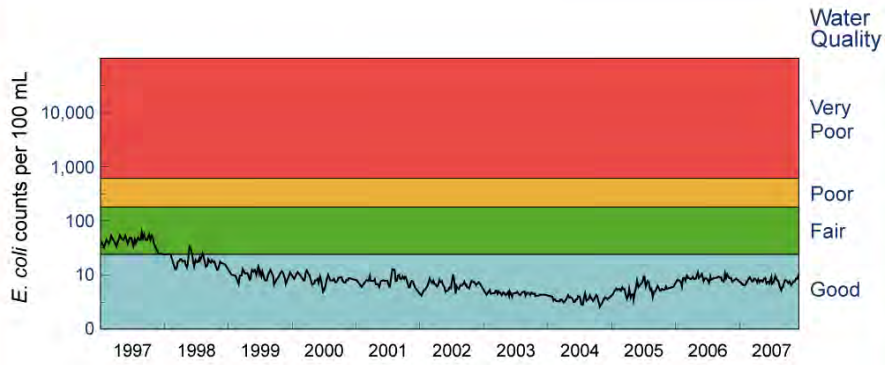


Legend: — 3-month running geometric mean trend line



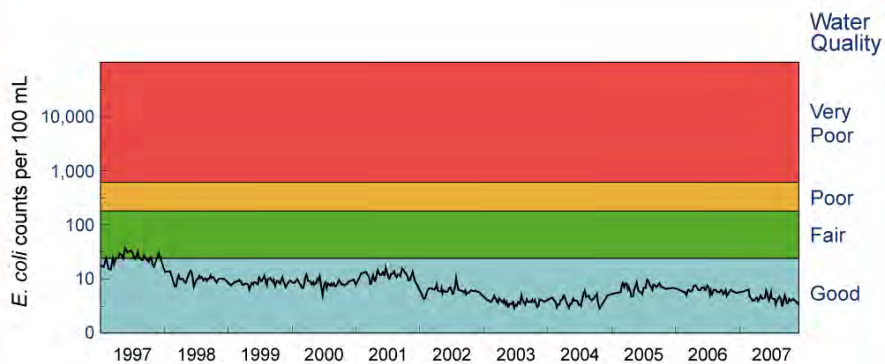


## Long-term trend of beach water quality - Stanley Main Beach



Legend: — 3-month running geometric mean trend line

## Long-term trend of beach water quality - Turtle Cove Beach



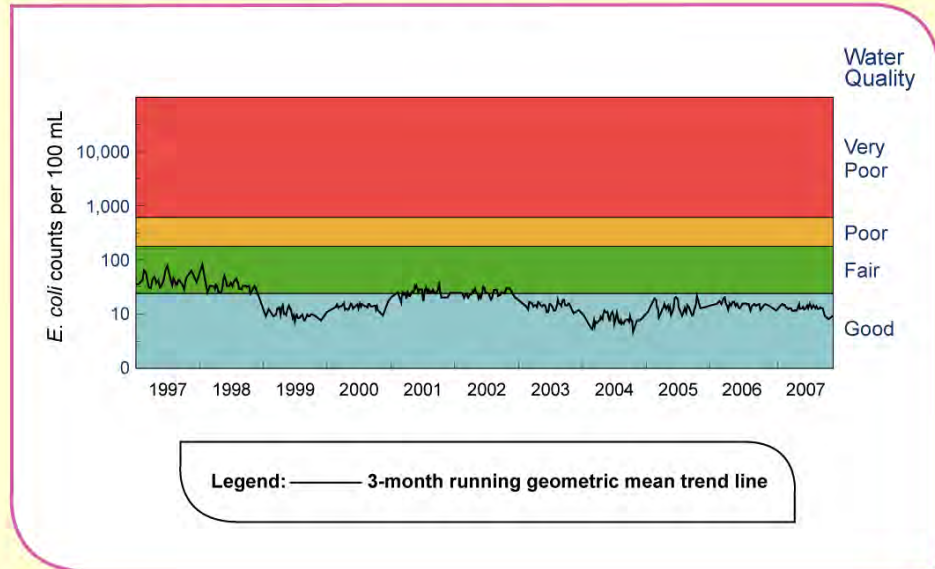
Legend: — 3-month running geometric mean trend line



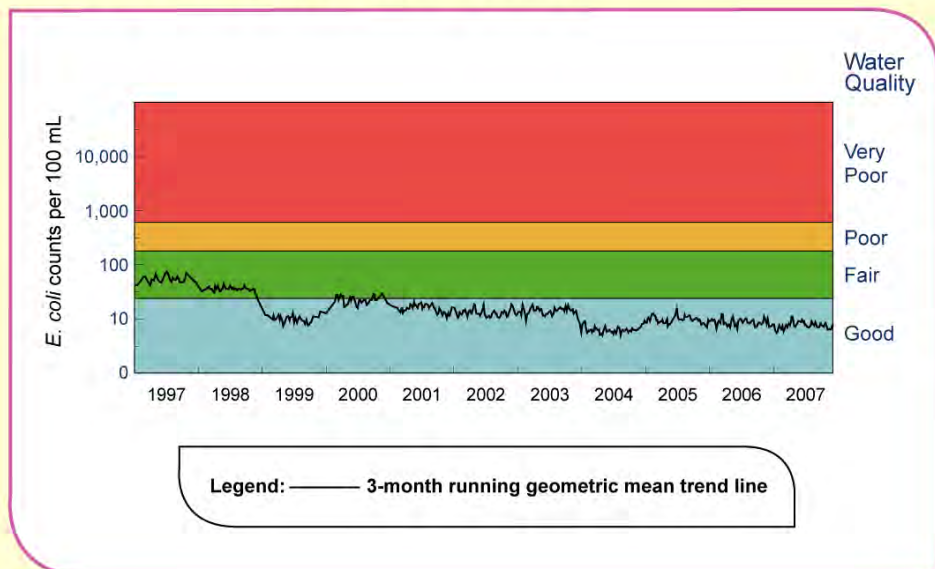


## - Sai Kung District

### Long-term trend of beach water quality - Clear Water Bay First Beach

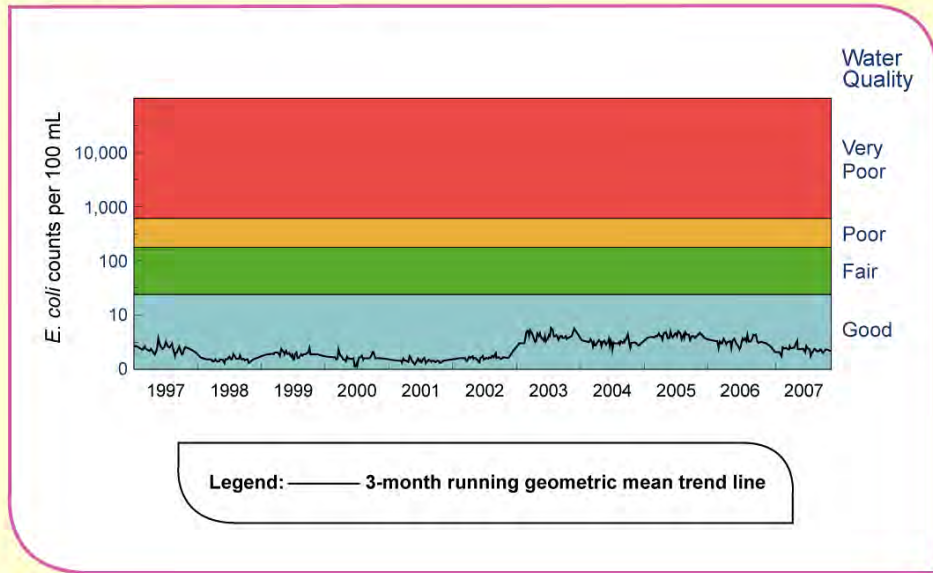


### Long-term trend of beach water quality - Clear Water Bay Second Beach

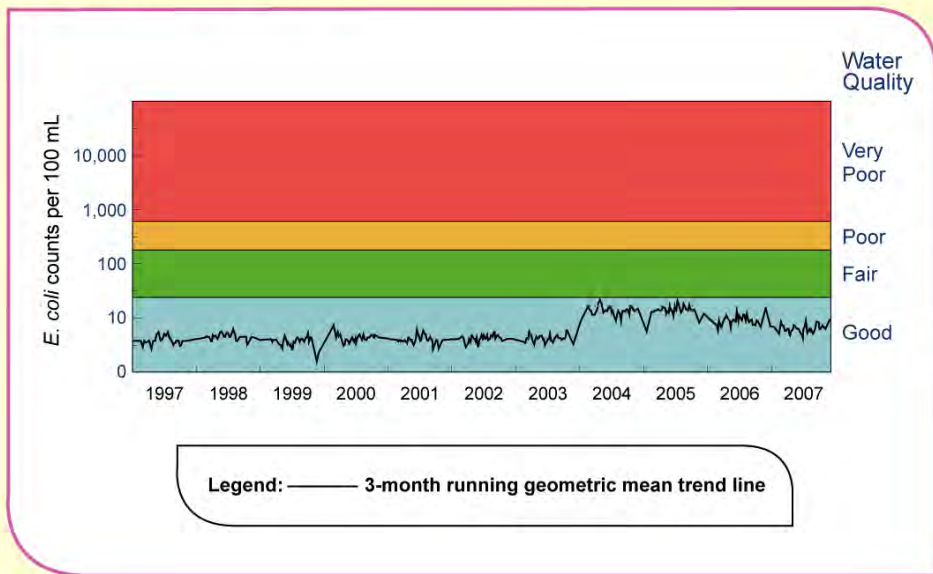




## Long-term trend of beach water quality - Hap Mun Bay Beach

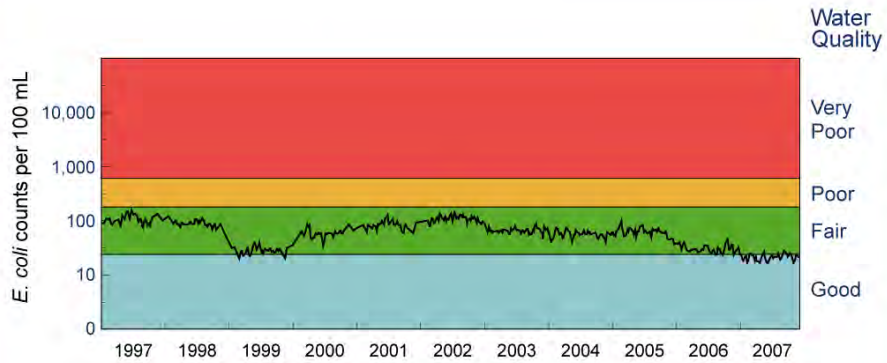


## Long-term trend of beach water quality - Kiu Tsui Beach



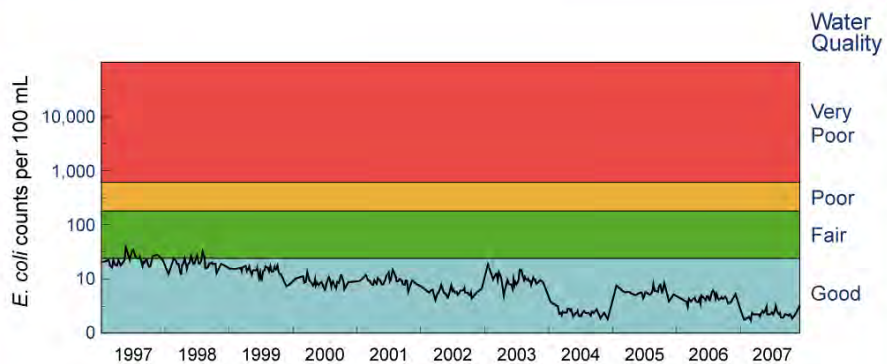


## Long-term trend of beach water quality - Silverstrand Beach



Legend: — 3-month running geometric mean trend line

## Long-term trend of beach water quality - Trio Beach

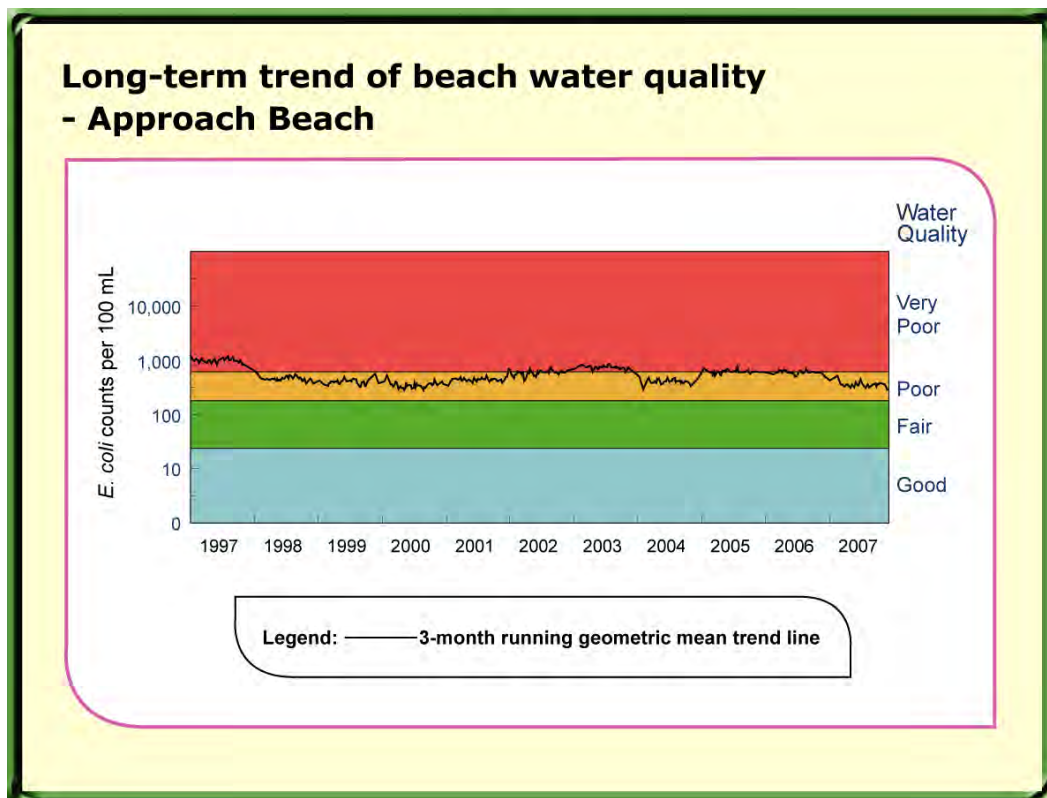
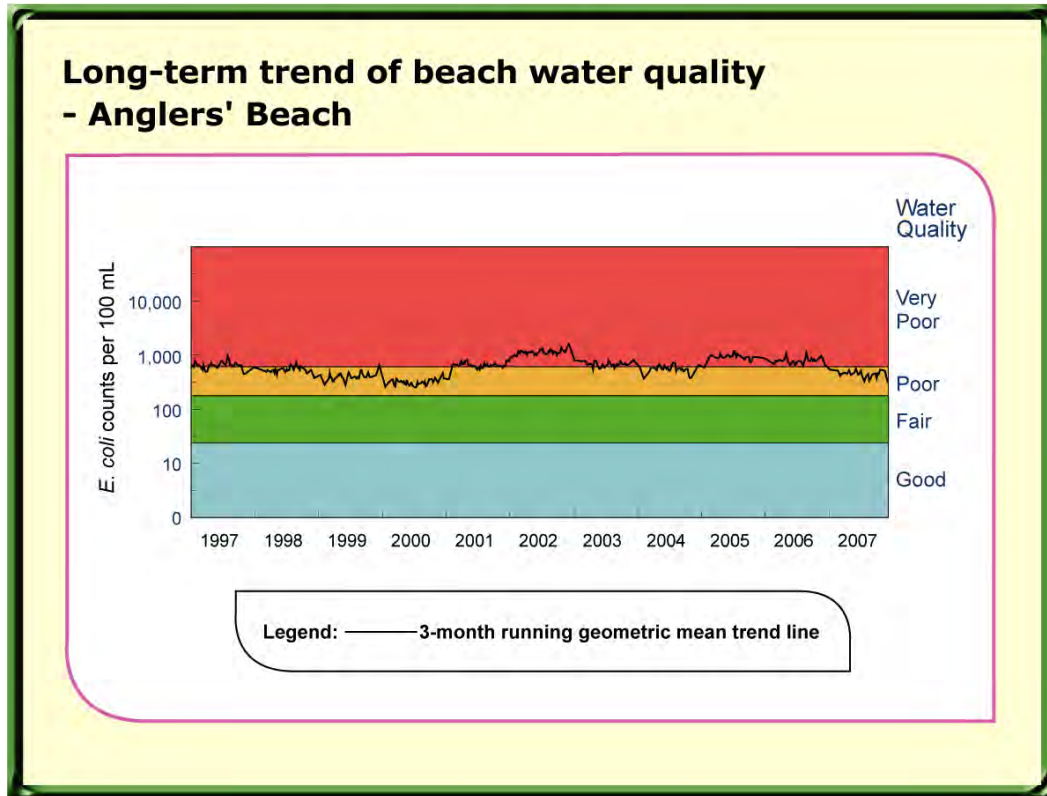


Legend: — 3-month running geometric mean trend line



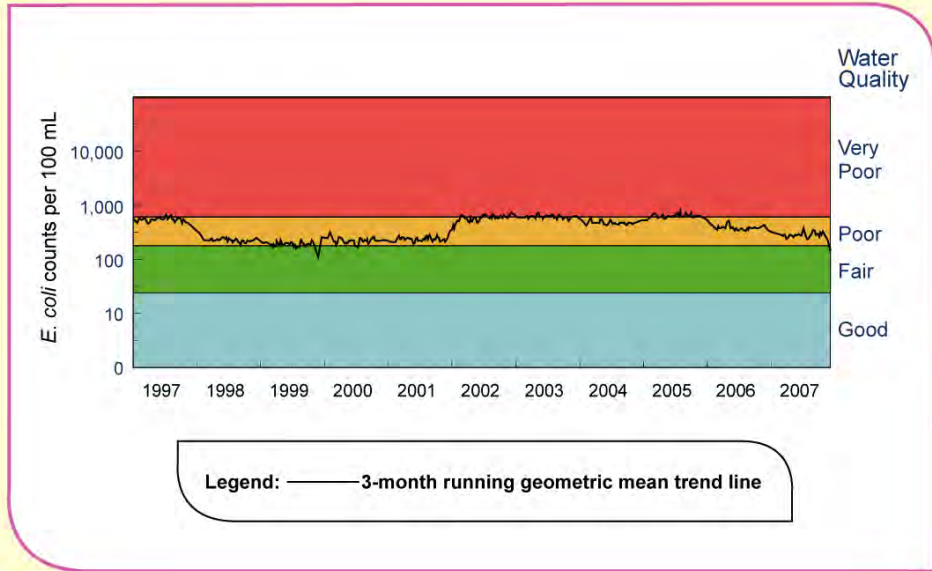


## - Tsuen Wan District

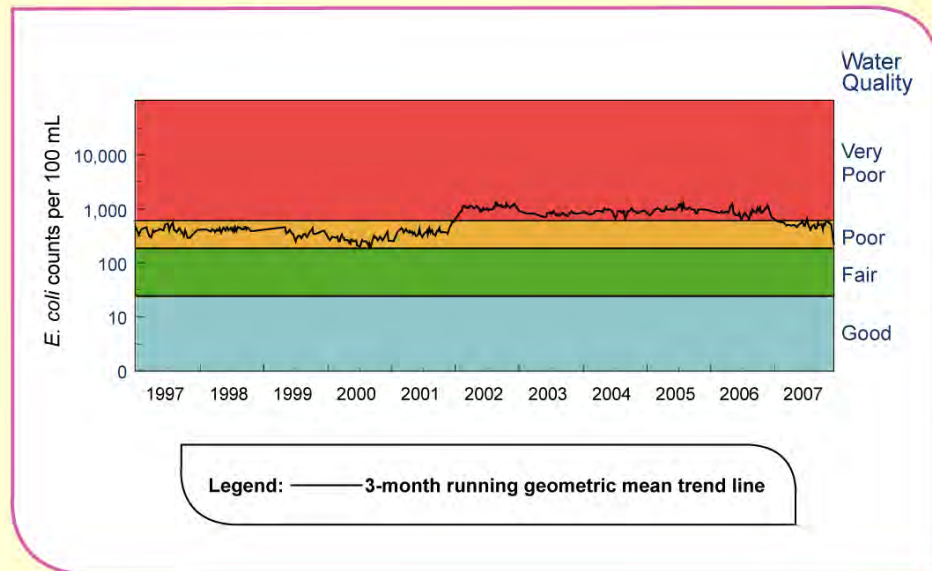




## Long-term trend of beach water quality - Casam Beach



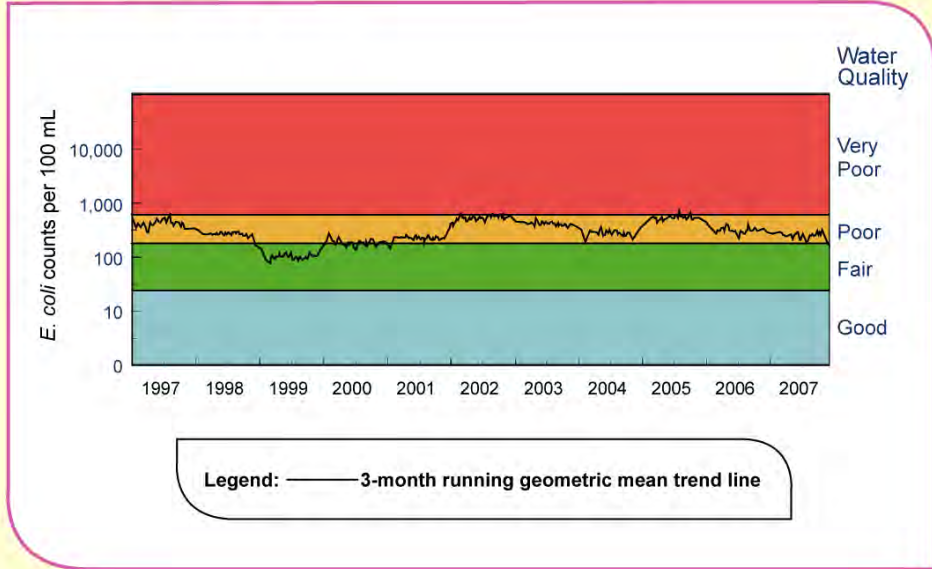
## Long-term trend of beach water quality - Gemini Beach



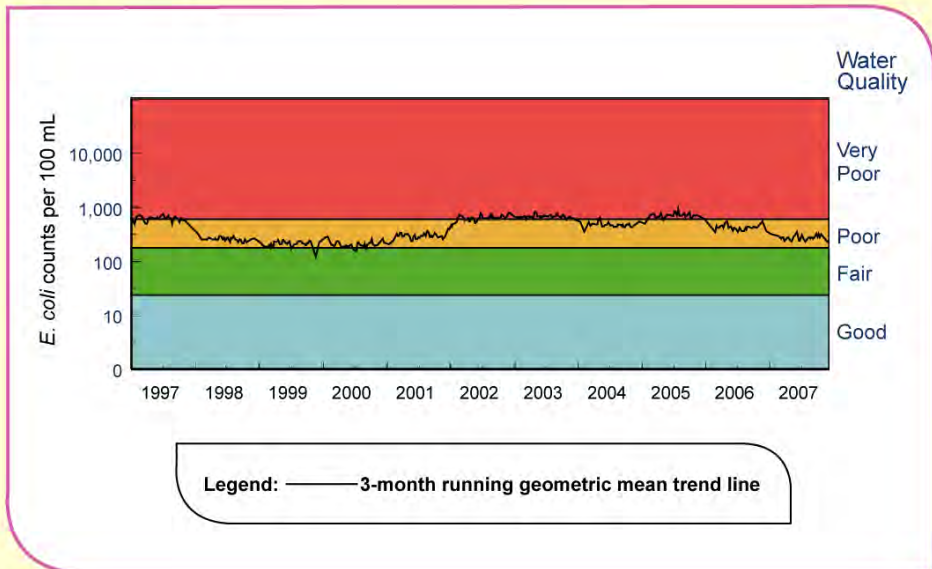




## Long-term trend of beach water quality - Hoi Mei Wan Beach

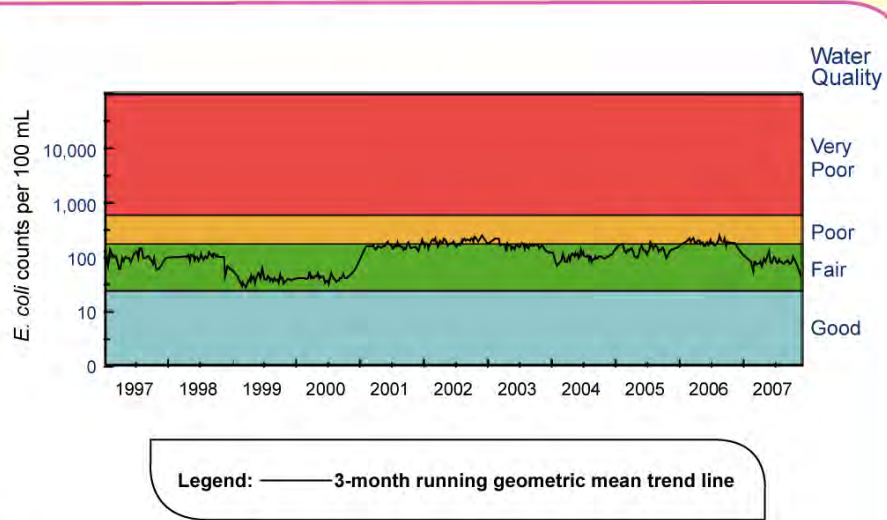


## Long-term trend of beach water quality - Lido Beach

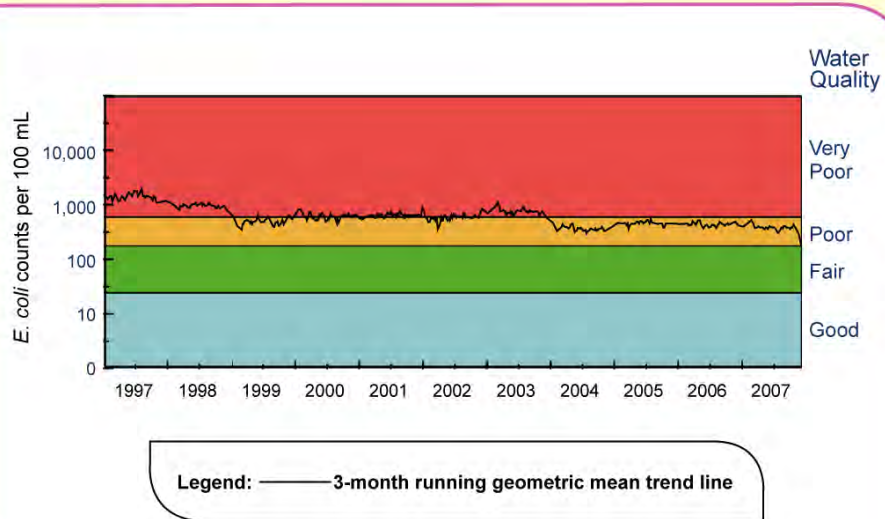




## Long-term trend of beach water quality - Ma Wan Tung Wan Beach

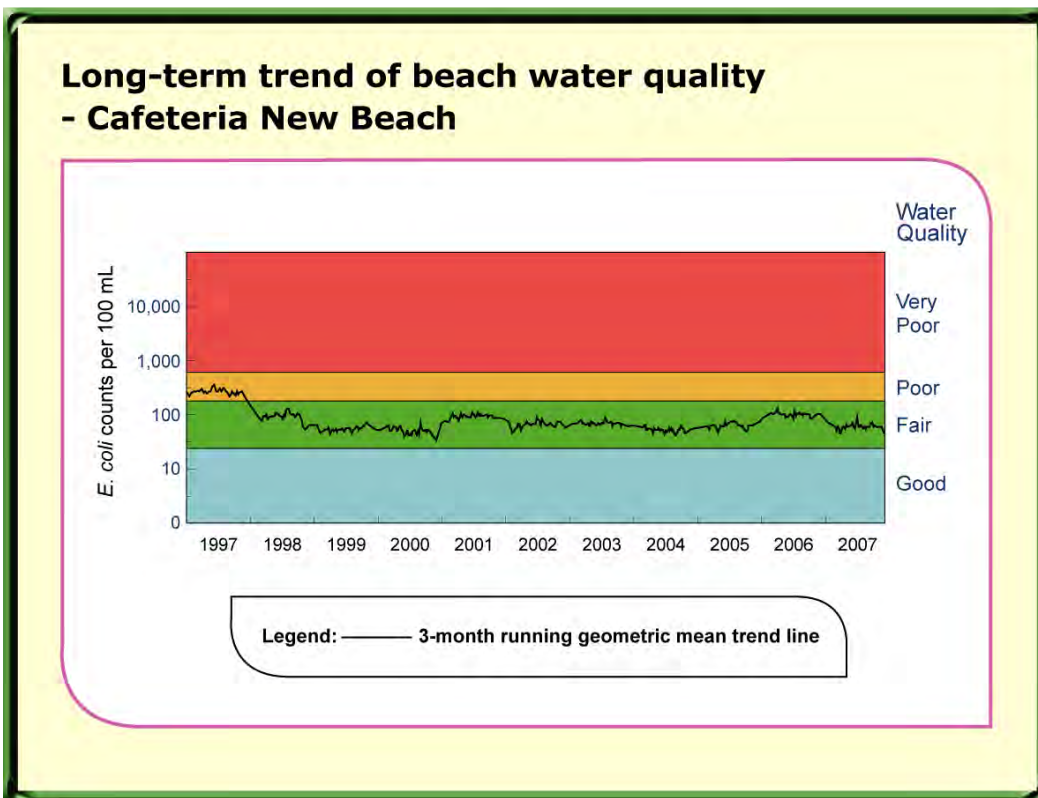
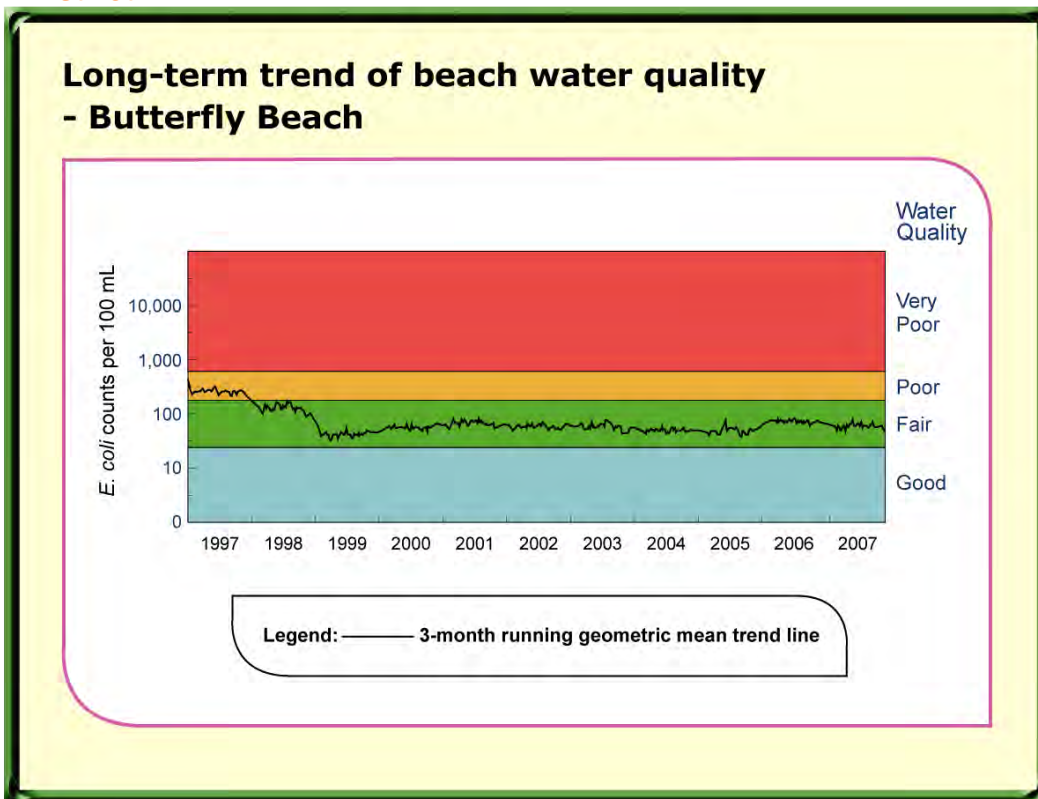


## Long-term trend of beach water quality - Ting Kau Beach





## - Tuen Mun District

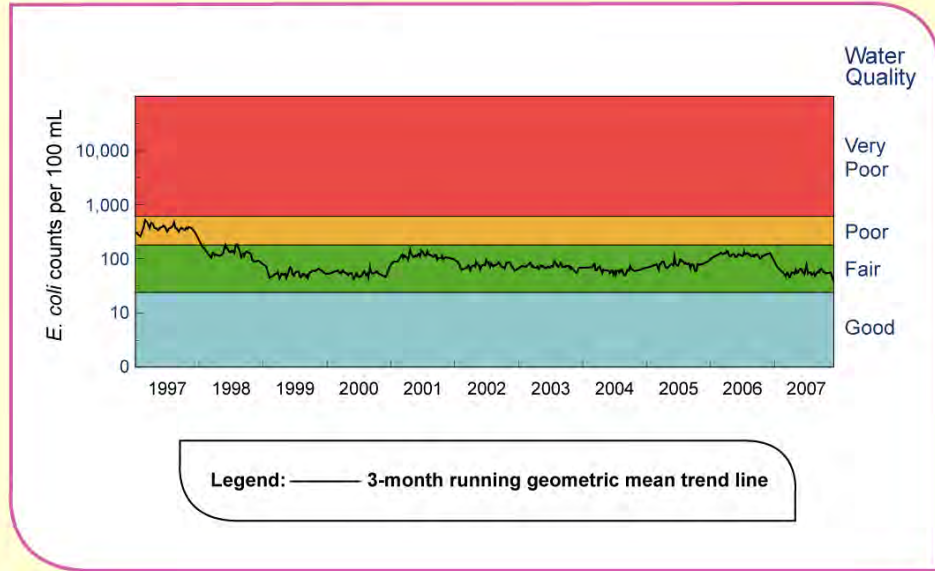


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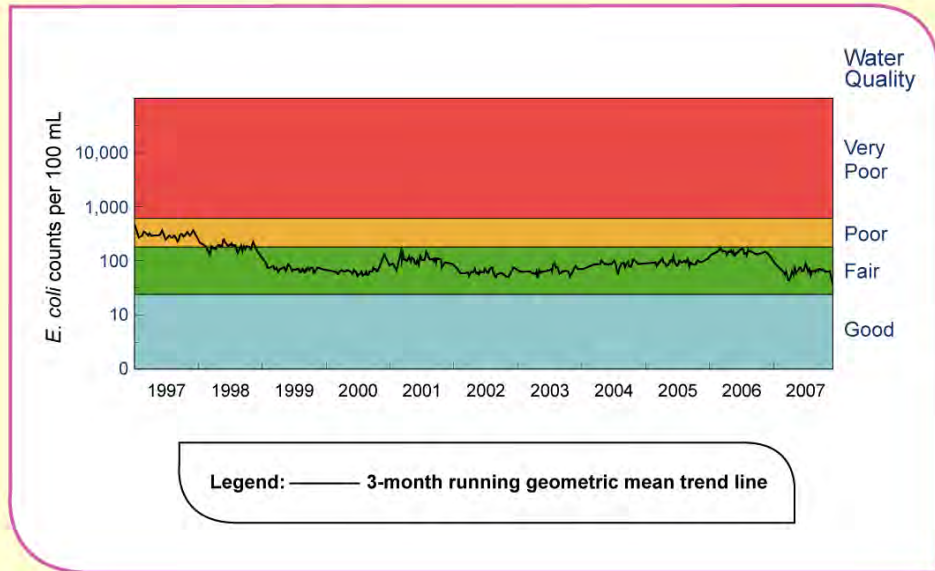




## Long-term trend of beach water quality - Cafeteria Old Beach

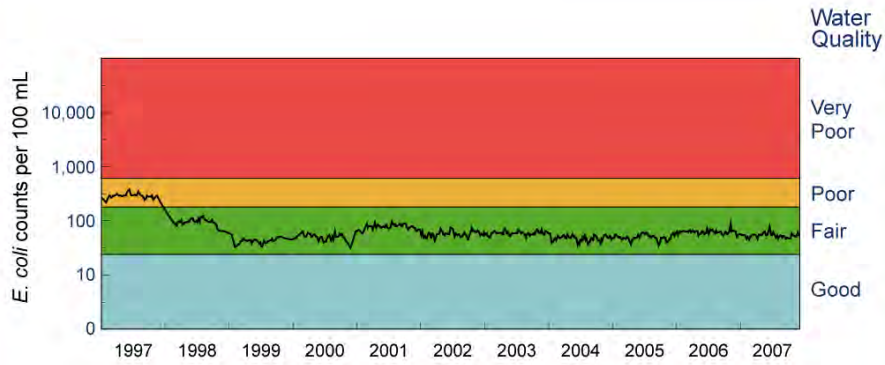


## Long-term trend of beach water quality - Castle Peak Beach



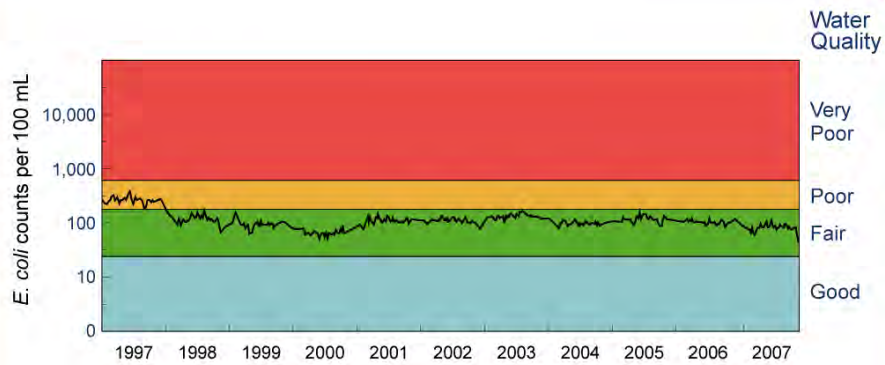


## Long-term trend of beach water quality - Golden Beach



Legend: — 3-month running geometric mean trend line

## Long-term trend of beach water quality - Kadoorie Beach



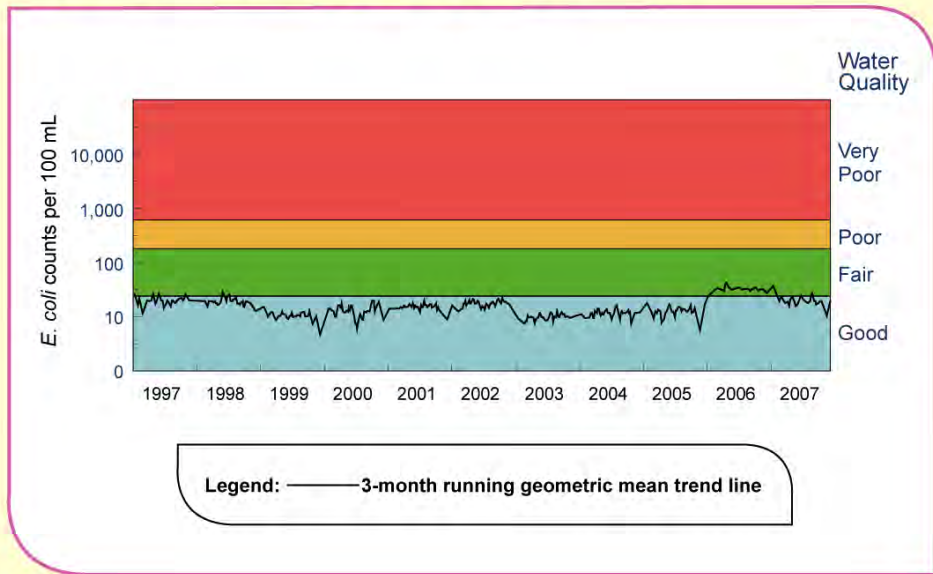
Legend: — 3-month running geometric mean trend line



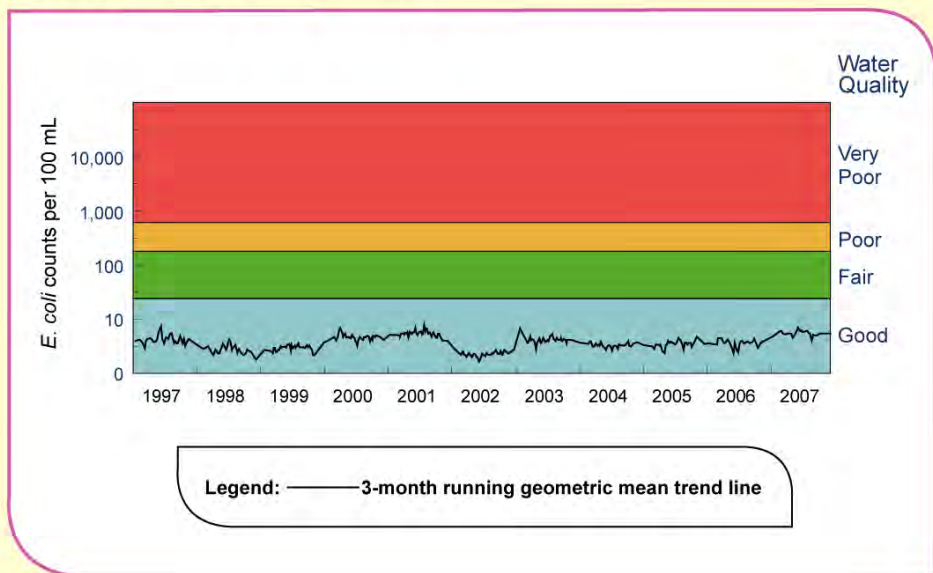


## - Outlying Islands

### Long-term trend of beach water quality - Cheung Chau Tung Wan Beach

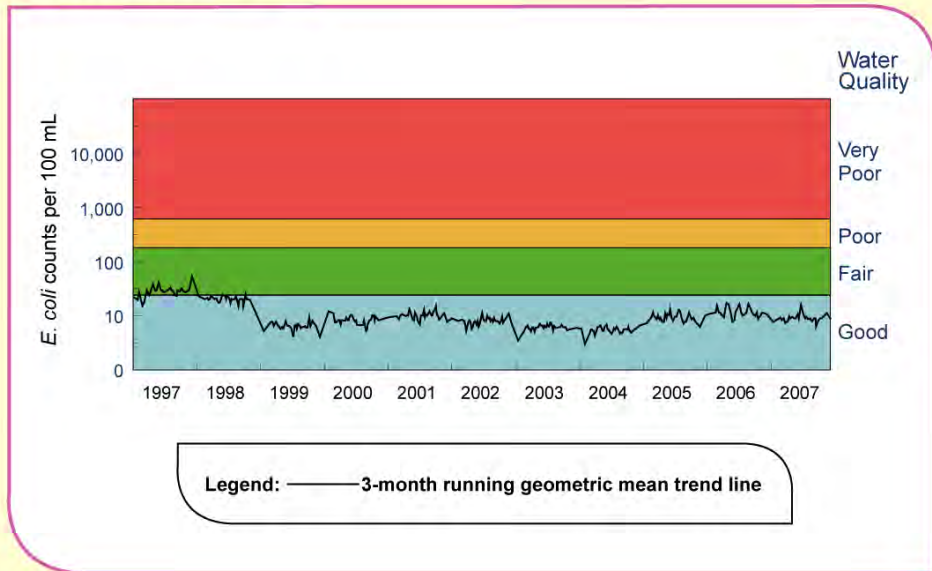


### Long-term trend of beach water quality - Hung Shing Yeh Beach

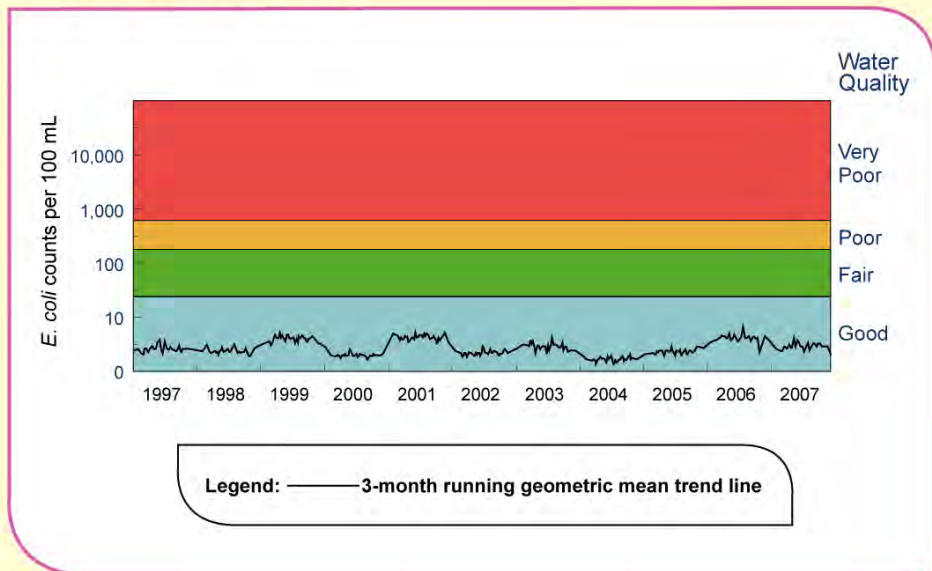




## Long-term trend of beach water quality - Kwun Yam Beach

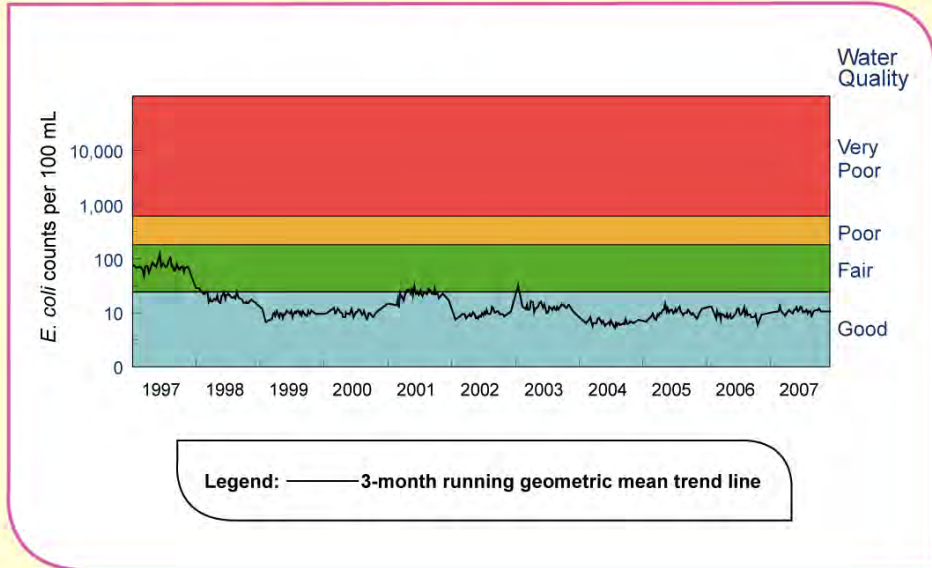


## Long-term trend of beach water quality - Lo So Shing Beach

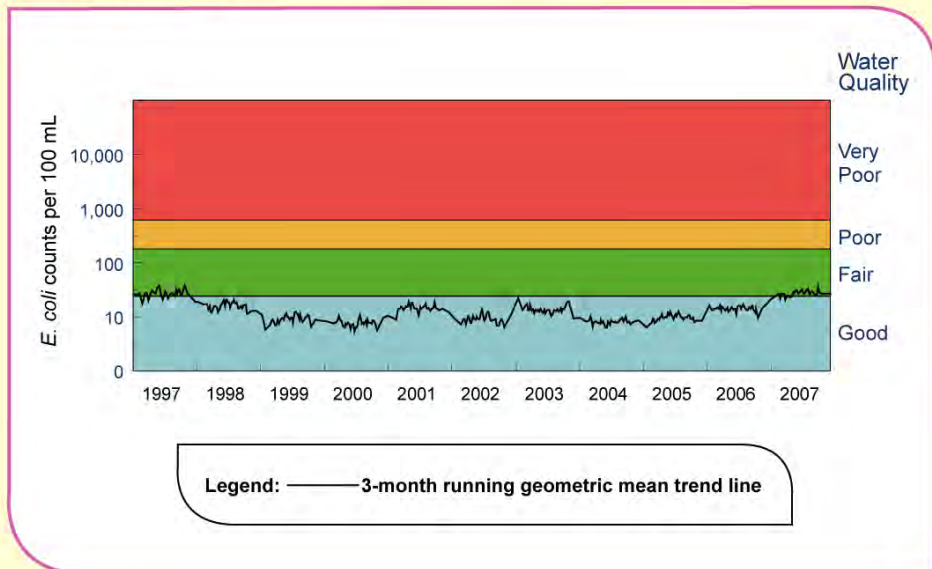




## Long-term trend of beach water quality - Lower Cheung Sha Beach



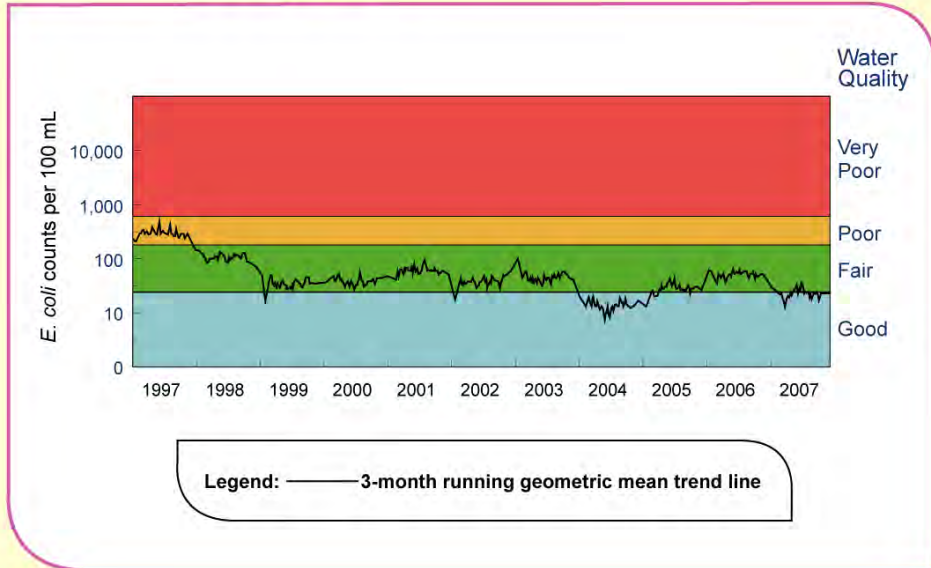
## Long-term trend of beach water quality - Pui O Beach



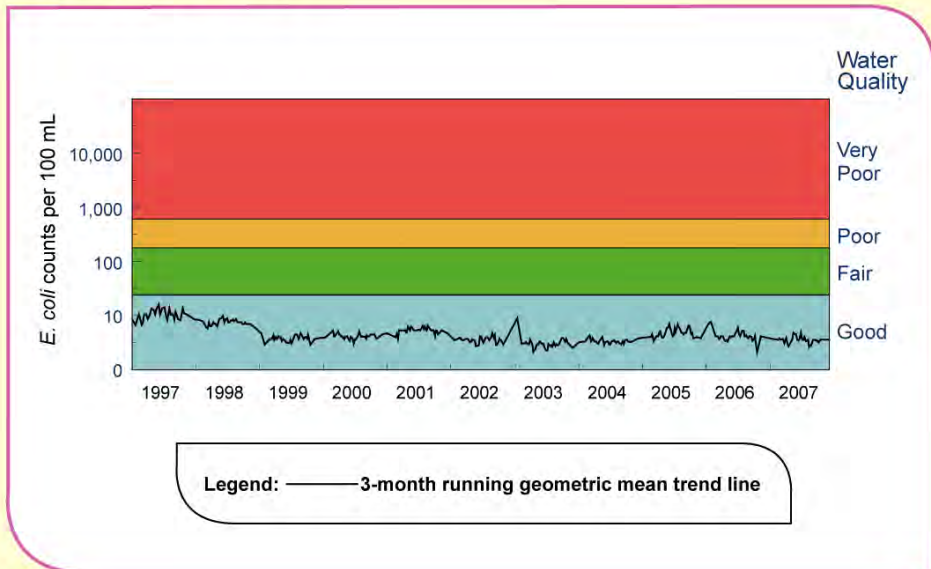




## Long-term trend of beach water quality - Silver Mine Bay Beach

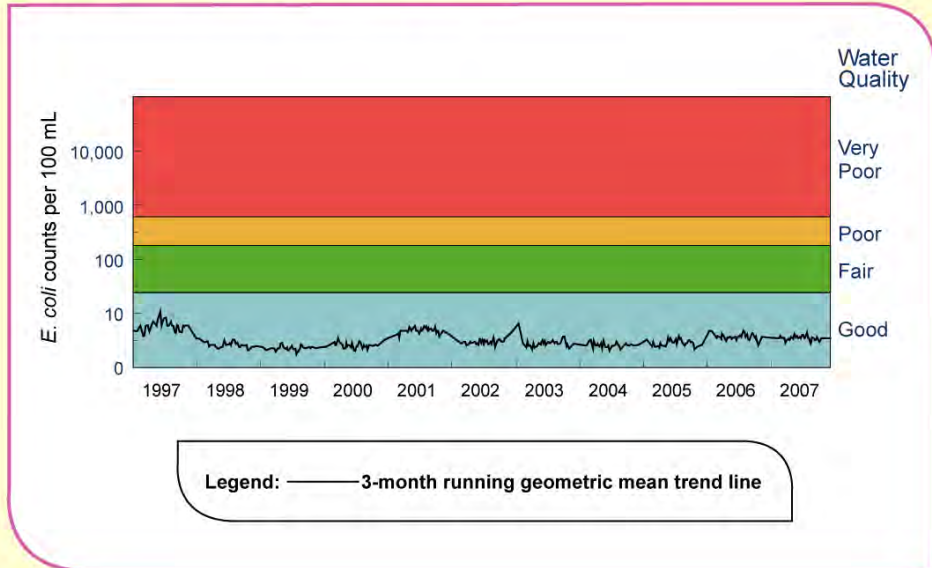


## Long-term trend of beach water quality - Tong Fuk Beach





## Long-term trend of beach water quality - Upper Cheung Sha Beach





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