

# 香港泳灘水質 2017

## *Beach Water Quality*

### *in Hong Kong*

為更佳泳灘水質而努力

*Strive for better beach water quality*



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



*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*



▲ Bathing beaches are valuable coastal resources of Hong Kong



## Introduction

Hong Kong is a blessed coastal city that boasts picturesque beaches with fine sands and clean water. These beaches are popular leisure destinations for millions of local residents and tourists alike every month during the summer.

The objective of the Environmental Protection Department (EPD)'s Beach Water Quality Monitoring Programme is to monitor beach water quality and protect the health of bathers. This report summarises the beach monitoring data collected in 2017, the gradings of the beaches and the annual compliance with the Water Quality Objective (WQO) for bathing beaches.



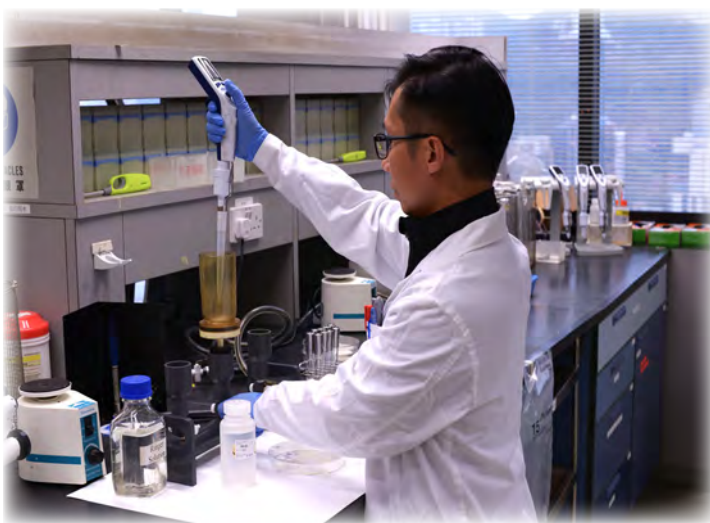
▲ Families and friends spending a relaxing day at a beach





# Beach Water Quality in Hong Kong 2017

In 2017, the EPD monitored 41 gazetted beaches and three non-gazetted beaches in different parts of the territory. The gazetted beaches were monitored weekly during the bathing season from March to October, and EPD staff conducted field observations and collected water samples for laboratory analyses of *Escherichia coli* (*E. coli*) as the bacteriological water quality indicator. EPD staff also took measurements of dissolved oxygen, pH, salinity, temperature and turbidity of beach water.



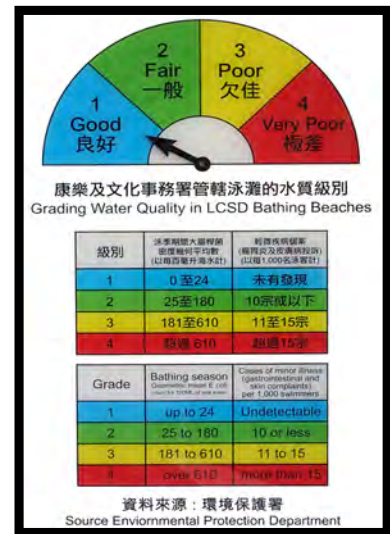
▲ EPD staff collecting water samples and measuring field data at beaches

◀ Analysis of water quality at EPD's environmental microbiology laboratory





Hong Kong's beaches are assessed using a dual rating system: annual ranking and weekly grading which are both based on the *E. coli* level in beach water to indicate potential health risks associated with swimming. The annual ranking reflects the overall water quality of the beach over the entire 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”. Those ranked “Good” or “Fair” meet the WQO for bathing waters.



▲ Water quality grading board displayed at the gazetted beaches

## Annual Beach Ranking in 2017

All 41 gazetted beaches in Hong Kong complied with the WQO in 2017. Compared with 2016, the number of beaches ranked as “Good” has increased from 18 (or 44 %) to 23 (or 56 %), and the number of beaches ranked as “Fair” has decreased from 23 (or 56%) to 18 (or 44%). Reduction in the annual geometric mean of *E. coli* level was recorded at 36 of the beaches. The improvement in water quality was largely brought by a relatively sunny bathing season of 2017, with cumulative rainfall 3% lower and the number of bright sunshine hours 16% higher when compared to the



▲ Stanley Main Beach in Southern District has received a “Good” ranking for five consecutive years

same period in 2016. Despite the overall water quality improvement, there was occasional transient water quality deterioration at individual beaches after heavy rainstorms in the summer (June-August), while the *E. coli* levels were still within the normal range of fluctuation of the bacteriological water quality, and had no overall adverse impact on the health of swimmers. No beach was ranked as “Poor” or “Very Poor” in 2017.



Among all 41 gazetted beaches in Hong Kong, the beaches located in Southern (Hong Kong Island South), Islands and Sai Kung Districts had generally better annual ranking. 11 of the 12 beaches in the Southern District were ranked as “Good” in 2017. Shek O Beach and Rocky Bay Beach had improved from “Fair” to “Good”, while Big Wave Bay Beach continued to receive a “Fair”



▲ Clear Water Bay Second Beach had improved annual ranking from “Fair” to “Good” in 2017

ranking. Of the nine beaches in the Islands District, seven were ranked as “Good”, including Lower Cheung Sha Beach which was ranked as “Fair” in the previous year. Pui O Beach and Silver Mine Bay Beach remained to be ranked as “Fair”. Silver Mine Bay Beach was temporarily closed by the Leisure and Cultural Services Department to carry out “Improvement Works at Silvermine Bay Beach, Mui Wo, Lantau Island” under the Signature Project Scheme (Islands District) during the 2017 bathing season, and is expected to reopen in mid-2018. In the Sai Kung District, five of the six beaches were rated as “Good” in 2017, in which Clear Water Bay First Beach and Clear Water Bay Second Beach have upgraded from “Fair” to “Good”, while Silverstrand Beach remained a “Fair” ranking. On the western side of the territory, all eight beaches in the Tsuen Wan District and all six beaches in the Tuen Mun District received a “Fair” ranking in 2017 same as the previous year.





The water quality of beaches in Tsuen Wan continued to be satisfactory after the commissioning of Harbour Area Treatment Scheme Stage 2A in December 2015. The seven beaches along Castle Peak Road had once been closed due to poor water quality before 2010. Upon the completion of



▲ Beaches in Tsuen Wan continued to exhibit satisfactory water quality

sewerage along Castle Peak Road in the beach hinterland and the commissioning of the Advanced Disinfection Facilities of the Harbour Area Treatment Scheme in March 2010, the water quality of these seven beaches improved considerably and met the WQO for bathing beaches. This led to the gradual re-opening of all these beaches during 2011 – 2014 and they have maintained open since then.

EPD also monitored three non-gazetted beaches in Hong Kong: Discovery Bay (a popular beach in Lantau Island), a sandy beach adjacent to Kiu Tsui Beach in Sai Kung, and a planned artificial beach in Lung Mei, Tai Po. In 2017, Discovery Bay has improved from “Fair” to “Good”. The beach adjacent to Kiu Tsui Beach continued to be ranked as “Good”, and Lung Mei as “Fair”. Most of the village houses in the Lung Mei area have been connected to the public sewerage network, and the remaining connection work is still ongoing. Together with the pollution abatement measures to be implemented, the water quality at Lung Mei will continue to improve.



## **Weekly Beach Grading in 2017**

To provide the latest beach water quality information to the public, the EPD issues weekly gradings of all open gazetted beaches and one non-gazetted beach (i.e. Discovery Bay) through weekly press release, EPD's websites, the beach enquiry hotline, GeoInfo Map of the GovHK website and noticeboards at the beaches.

In 2017, beaches in the Southern District continued to enjoy excellent water quality. All ten open gazetted beaches received “Good” or “Fair” grading most of the time in the bathing season. In particular, Repulse Bay Beach, South Bay Beach and St. Stephen’s Beach achieved all “Good” grading for the entire bathing season, only Deep Water Bay Beach and Big Wave Bay Beach received a “Very Poor” grading once, in early May and early July respectively, after heavy rain.

The beaches in the Islands District had decent water quality. Lo So Shing Beach and Upper Cheung Sha Beach achieved “Good” grading for the entire bathing season, and the latter has maintained 100% “Good” grading record for three consecutive years since 2015. In addition, Hung Shing Yeh Beach and Tong Fuk Beach were also graded as “Good” over 90% of the time. Only Lower Cheung Sha Beach was rated as “Very Poor” once in late May. No weekly grading was given to Silver Mine Bay Beach in 2017 during its closure for improvement works.



▲ Pui O Beach - a unique black-sand beach in Lantau Island







▲ Clear Water Bay First Beach – a gem in the forest

Beaches in the Sai Kung District had fine water quality with mostly “Good” or “Fair” weekly grading. Silverstrand Beach was rated as “Very Poor” on four occasions, all associated with storms. Hap Mun Bay Beach and Kiu Tsui Beach were two of the seven beaches in Hong Kong achieving 100% “Good” grading in 2017.

The water quality of the beaches in the Tuen Mun District was satisfactory and suitable for swimming. These beaches usually received “Fair” and occasionally “Good” weekly grading. Butterfly Beach, Castle Peak Beach, Kadoorie Beach and Old Cafeteria Beach were each graded as “Very Poor” once in the first half of year after heavy rain.



▲ Castle Peak Beach - in the  
◀ shade of trees

Tsuen Wan beaches continued to have an improving trend of water quality. Although still mostly rated as “Fair”, the beaches received more “Good” grading when compared to last year. Approach Beach, Hoi Mei Wan Beach and Ting Kau Beach were rated as “Very Poor” one to three times after heavy rain during the summer.

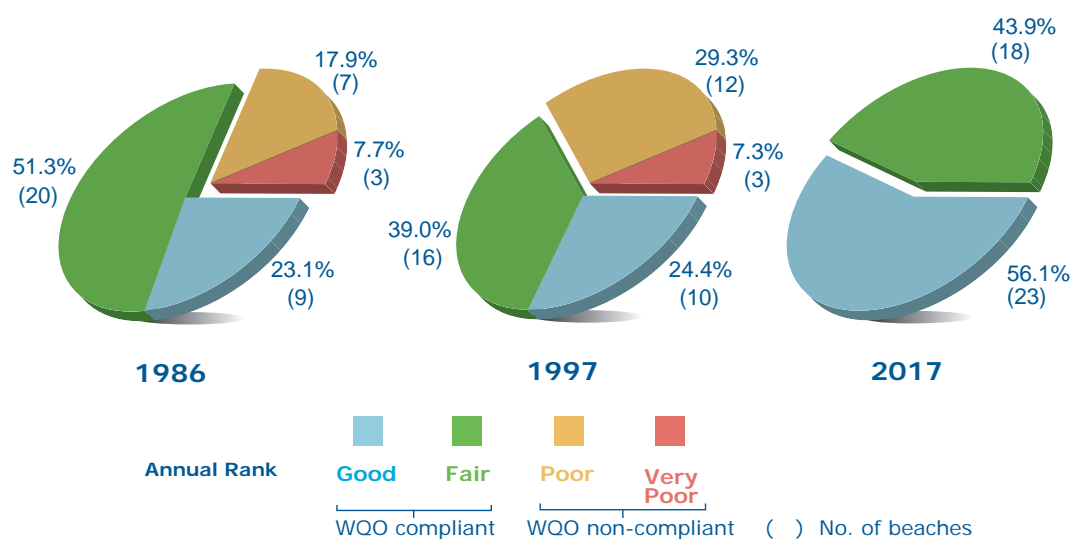




## Water Quality Trend

The beach water quality in Hong Kong has been fully in compliance with the WQO, and suitable for swimming, for the last eight years. The percentage of beaches complying with the WQO had once dropped from 74% in 1986 (29 of 39 beaches) to 63% (26 of 41 beaches) in 1997, and then achieved 100% (all 41 beaches) since 2010.

## Comparison of annual beach ranking of gazetted beaches in 1986, 1997 and 2017



Note: Two beaches degazetted in 1995 were excluded from all the statistics above

Back in the 1980s, many beaches were closed, such as Cafeteria Old Beach, Castle Peak Beach and Silver Mine Bay Beach, or on the verge of being closed (e.g. Middle Bay Beach and Repulse Bay Beach) due to poor water quality. There was a further drop in compliance rate in the mid-1990s due to population growth particularly in the new town areas. In the past two decades, there has been progressive improvement in beach water quality as a result of various pollution abatement measures, including enforcement of environmental legislation, extension of the sewerage network and provision of new sewage treatment facilities across the territory including the beach hinterland, as well as implementation of the Harbour Area Treatment Scheme. Major improvement measures implemented in the past are summarized in the following table.



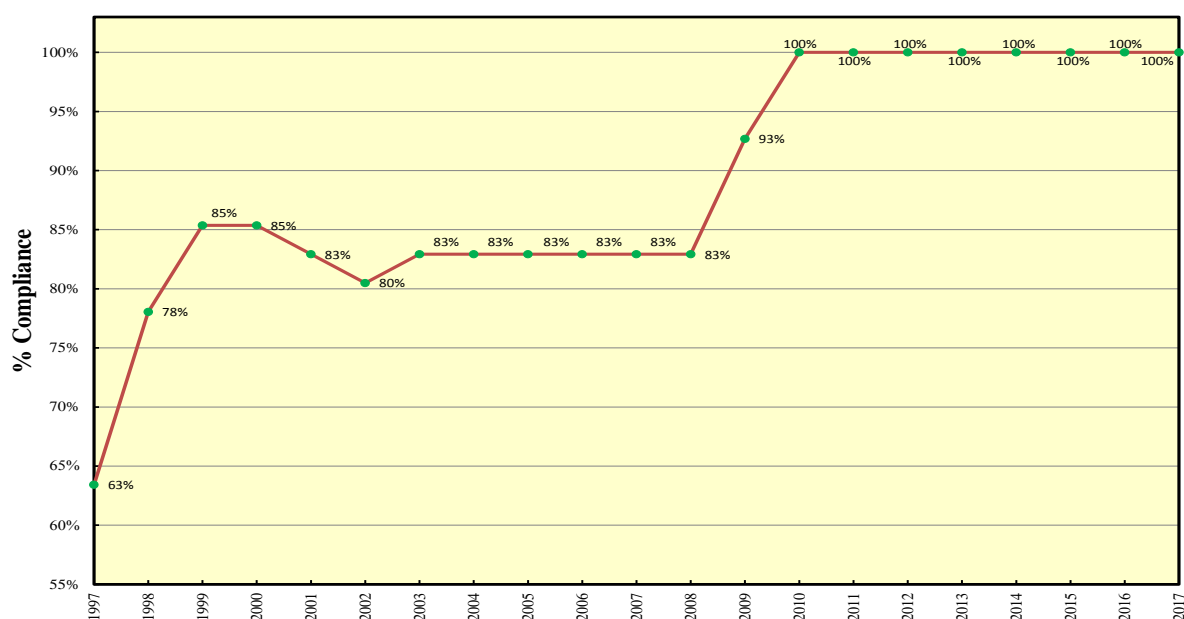
Major improvement measures for the beaches since the implementation of beach water quality monitoring programme in 1986	
1986 – 1990	Beaches with Water Quality Improvement
<ul style="list-style-type: none"> <li>Implementation of the Livestock Waste Control Scheme under the Waste Disposal (Livestock Waste) Regulation.</li> <li>Declaration of the Southern Water Control Zone (WCZ) under the Water Pollution Control Ordinance (WPCO) for legislative enforcement.</li> <li>Interception and diversion of polluted storm drains at beaches in Southern District.</li> </ul>	<p>Most beaches, particularly Silver Mine Bay Beach</p> <p>Southern beaches</p> <p>Southern beaches</p>
1991 – 1995	
<ul style="list-style-type: none"> <li>Implementation of chemical waste control.</li> <li>Declaration of the North Western WCZ under the WPCO for legislative enforcement.</li> <li>Diversion of polluted storm water drains away from Castle Peak Beach.</li> <li>Provision of public sewers for So Kwun Wat and Sam Shing Estate.</li> <li>Commissioning of Stanley Sewage Treatment Works (STW).</li> </ul>	<p>All beaches</p> <p>Tuen Mun beaches</p> <p>Castle Peak Beach</p> <p>Tuen Mun Beaches</p> <p>Stanley Main Beach</p>
1996 – 2000	
<ul style="list-style-type: none"> <li>Full implementation of the WPCO in all WCZs.</li> <li>Commissioning of the Shek O Sewage Screening Plant and diversion of polluted storm water drains at Shek O Village .</li> <li>Completion of all major works under the Southern Sewerage Master Plan.</li> <li>Commissioning of the new 2 km long Pillar Point submarine outfall.</li> </ul>	<p>All beaches</p> <p>Shek O Beach</p> <p>Southern beaches</p> <p>Tuen Mun beaches</p>
2001 – 2005	
<ul style="list-style-type: none"> <li>Completion of Harbour Area Treatment Scheme Stage 1.</li> <li>Provision of public sewers in the Silverstrand area.</li> <li>Full operation of the Sham Tseng STW.</li> </ul>	<p>Big Wave Bay, Shek O and Rocky Bay Beaches</p> <p>Silverstrand Beach</p> <p>Beaches along the Tsuen Wan coast</p>
2006 – 2017	
<ul style="list-style-type: none"> <li>Commissioning of the Advance Disinfection Facilities at the Stonecutters Island STW.</li> <li>Extension of the public sewerage network to the beach hinterland along Castle Peak Road.</li> <li>Full operation of the Harbour Area Treatment Scheme (HATS) Stage 2A.</li> </ul>	<p>All Tsuen Wan beaches</p> <p>Beaches along the Tsuen Wan coast</p> <p>Beaches along the Tsuen Wan coast</p>





All of Hong Kong's gazetted beaches have now achieved the required standard for swimming for the eighth consecutive year. EPD will continue to closely monitor the beach water quality in the future to support water quality management policy and as reference for beach users.

## Compliance with WQO at gazetted beaches, 1997 - 2017





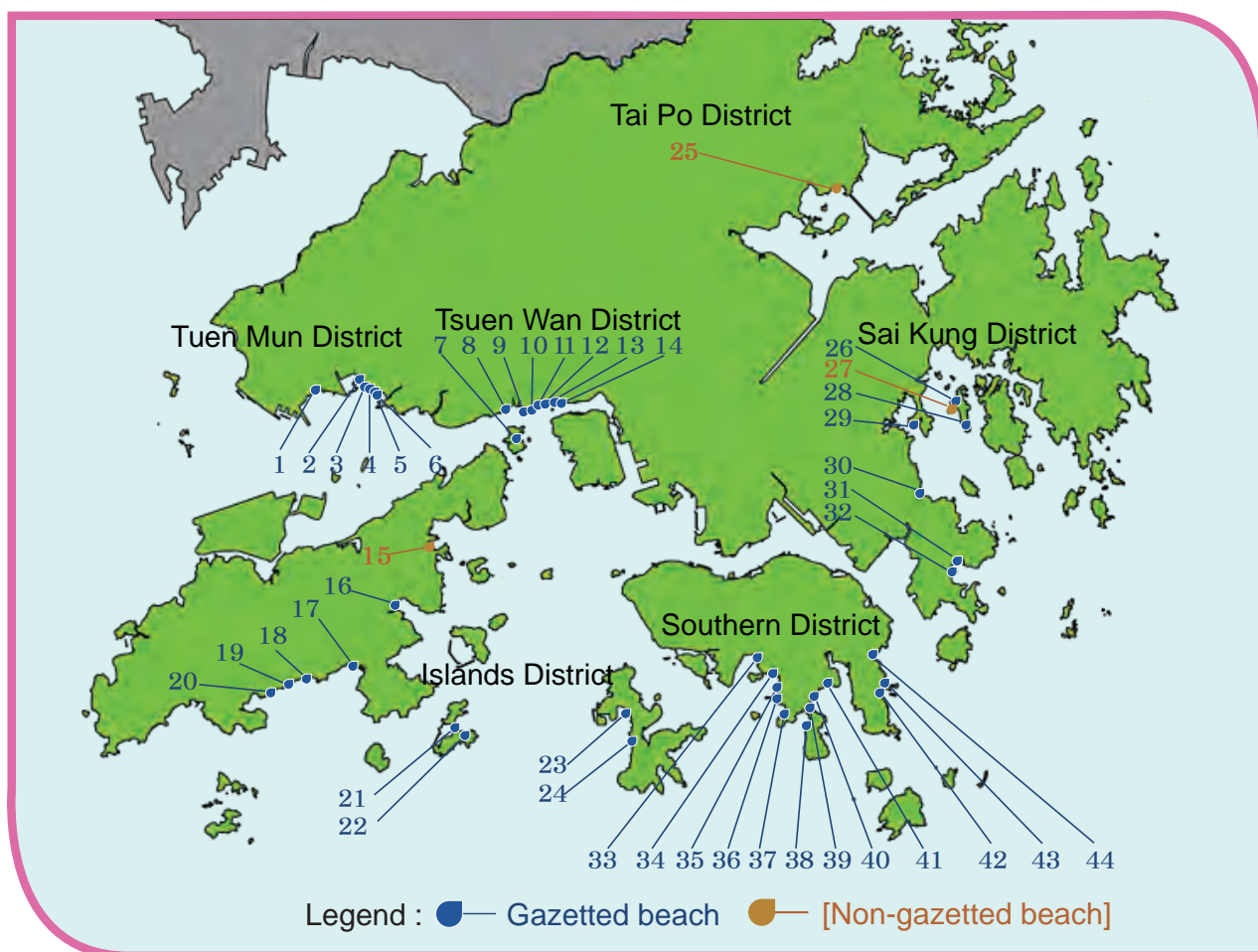
Water quality trend lines of gazetted beaches over the past 32 years are included in this report to show the changes over the years. More in-depth background and details of the beach monitoring programme are available at the EPD's [Hong Kong Water Quality Resource Centre thematic website](http://wqrc.epd.gov.hk) (<http://wqrc.epd.gov.hk>) or its [beach water quality thematic website](http://www.beachwq.gov.hk) (<http://www.beachwq.gov.hk>).



Beach water quality monitored for protecting the health of bathers



## 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





## Beach monitoring frequency

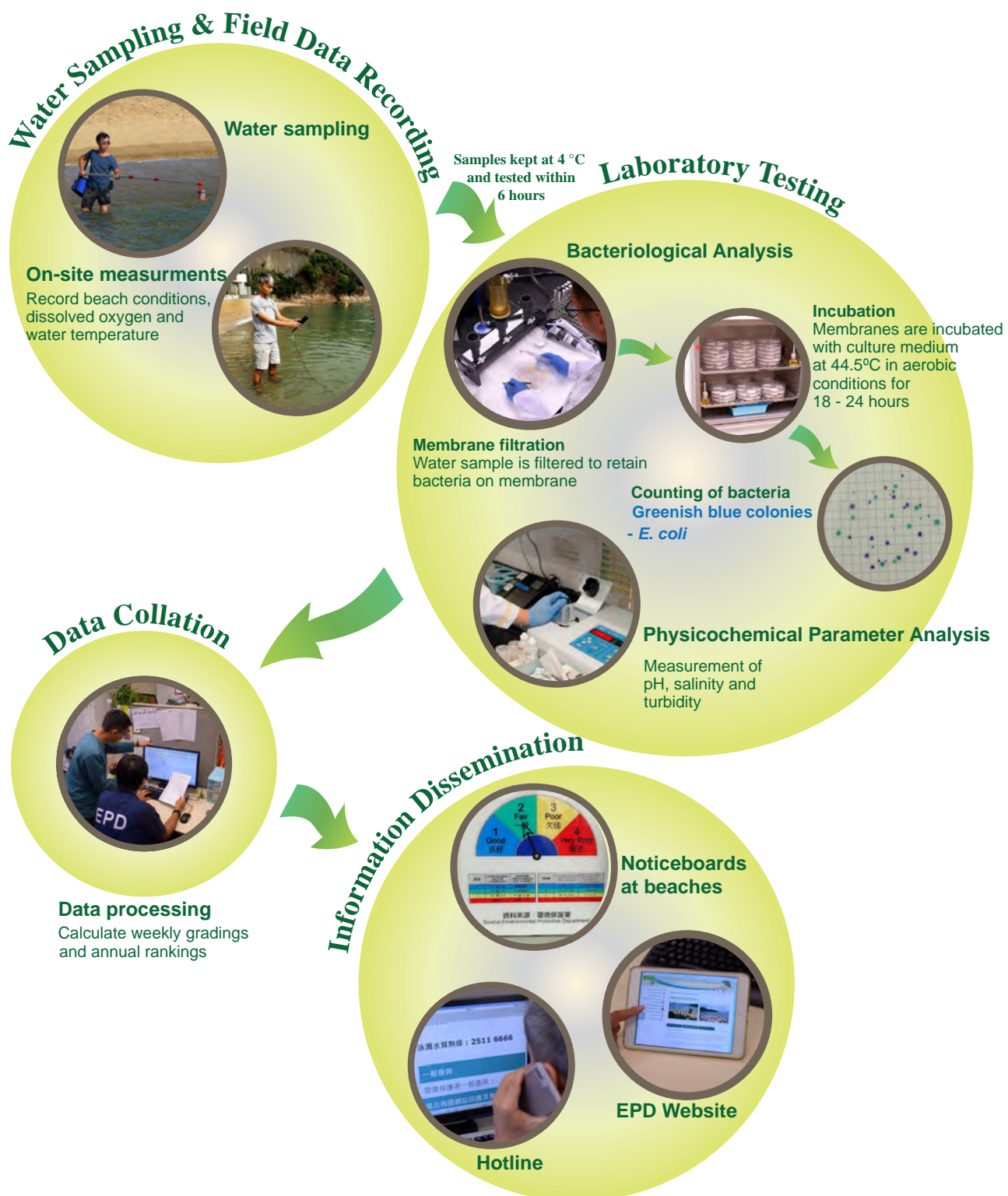
Beach	Monitoring frequency per month	
	Bathing season*	Non-bathing season
Gazetted beaches open all year round **	at least 3 times	at least 3 times
Other gazetted beaches	at least 3 times	once
Non-gazetted beaches	at least 3 times	once

\* March to October

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



## Overview of various stages of the Beach Monitoring Programme





## 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

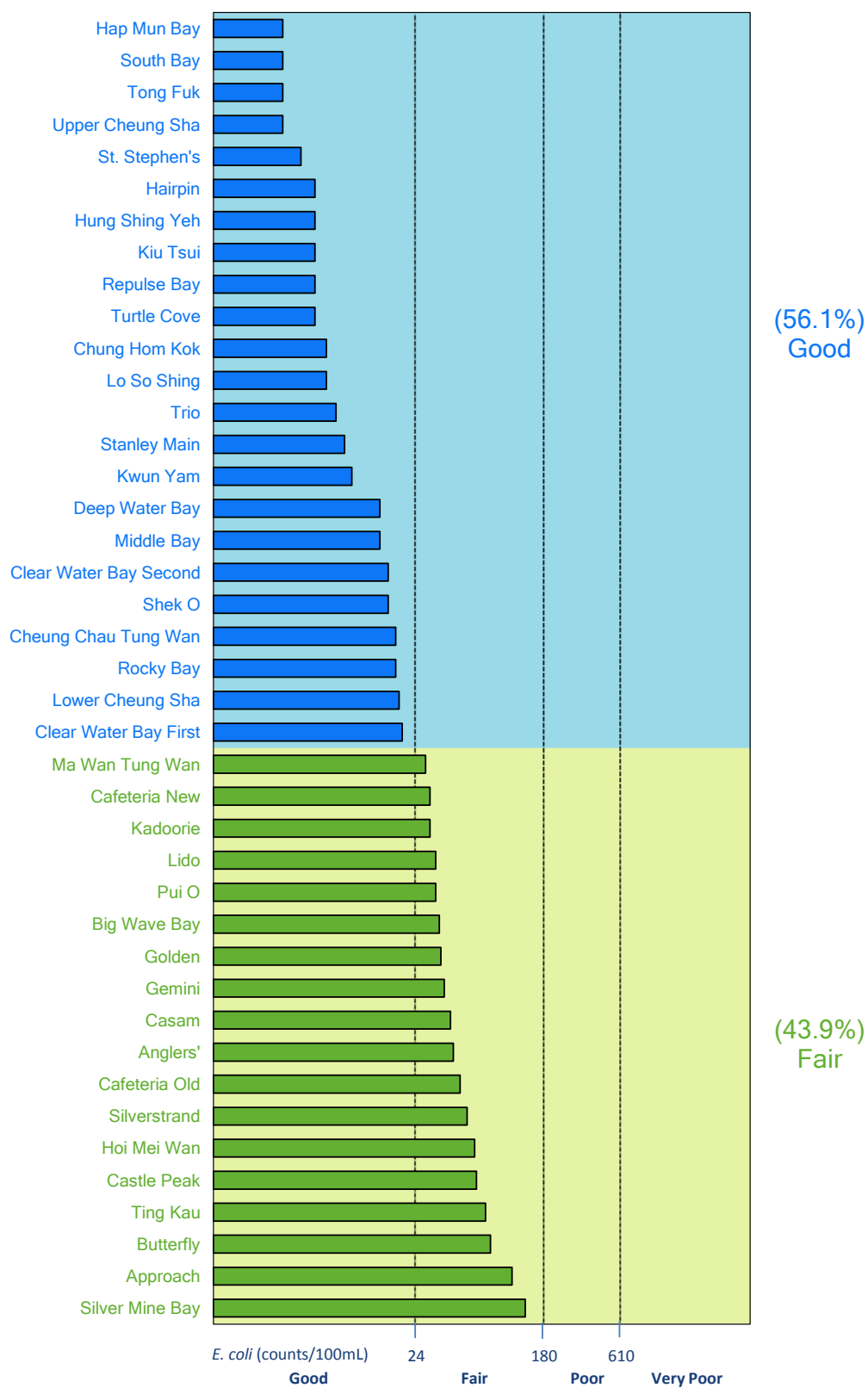
Grade	Beach water quality	<i>E. coli</i> counts per 100 mL*	Minor illness rate** (Cases per 1,000 swimmers)
1	Good	≤24	Undetectable
2	Fair	25-180	≤10
3	Poor	181-610	11-15
4	Very Poor	>610 or last reading >1,600	>15

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

\*\* Skin and gastrointestinal illnesses



## 2017 Annual ranking and bathing season geometric mean *E. coli* levels of Hong Kong's gazetted beaches

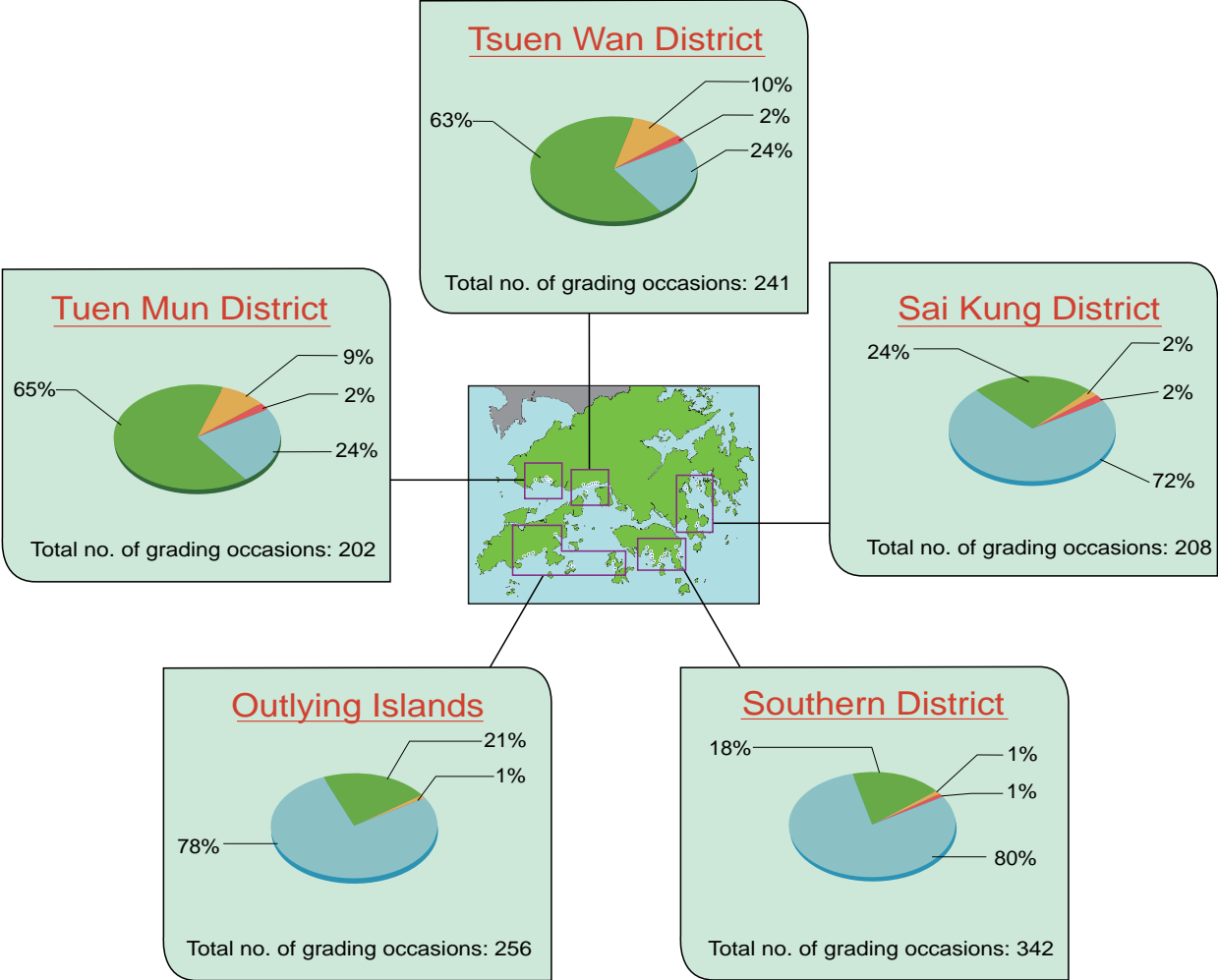




**Annual ranking of gazetted beaches at a glance in 2017**



Weekly beach grading summary of open gazetted beaches by district in 2017



Note: Figures may not add up to 100% due to roundings

Beach Grade	1	2	3	4
	Good	Fair	Poor	Very Poor





## Southern District beaches

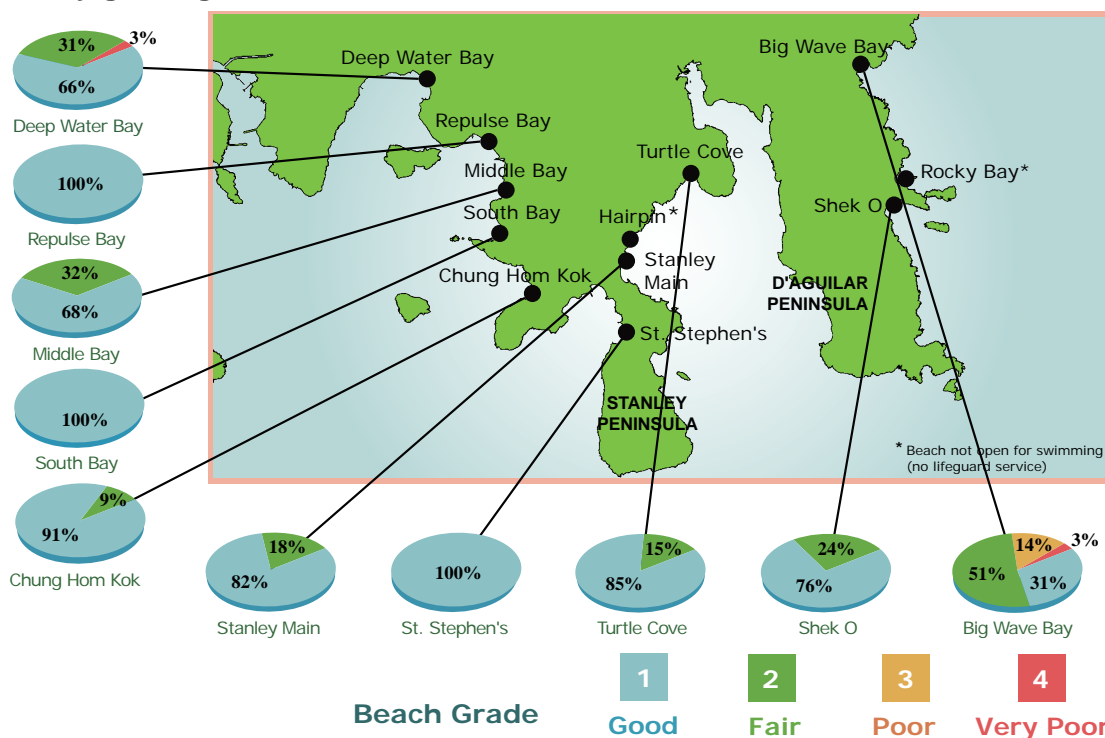
### Annual ranking



Annual Rank

<span style="color: blue;">●</span>	<span style="color: green;">●</span>	<span style="color: orange;">●</span>	<span style="color: red;">●</span>
Good	Fair	Poor	Very Poor

### Weekly grading



Beach Grade

<span style="background-color: #4682B4; color: white; padding: 2px 5px;">1</span>	<span style="background-color: #3CB371; color: white; padding: 2px 5px;">2</span>	<span style="background-color: #FF8C00; color: white; padding: 2px 5px;">3</span>	<span style="background-color: #DC143C; color: white; padding: 2px 5px;">4</span>
Good	Fair	Poor	Very Poor

Note: Figures may not add up to 100% due to roundings; "\*" Beach not open for swimming. No grading was provided

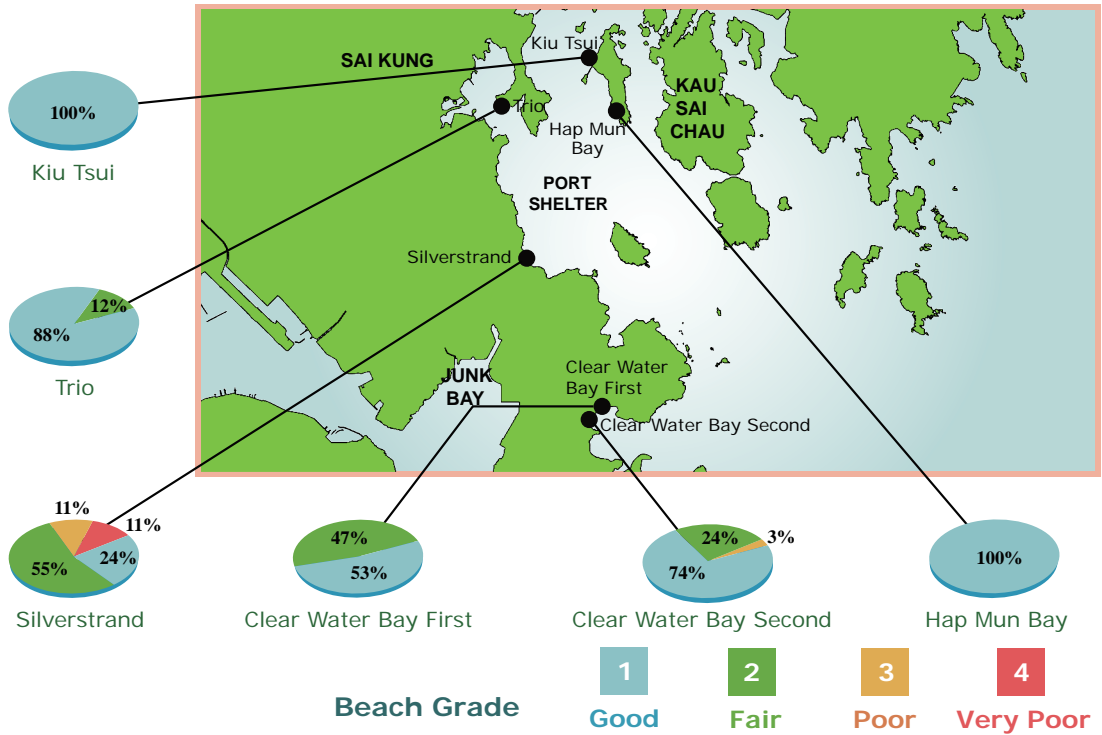


Sai Kung beaches

Annual ranking



Weekly grading



Note: Figures may not add up to 100% due to roundings





## Tsuen Wan beaches

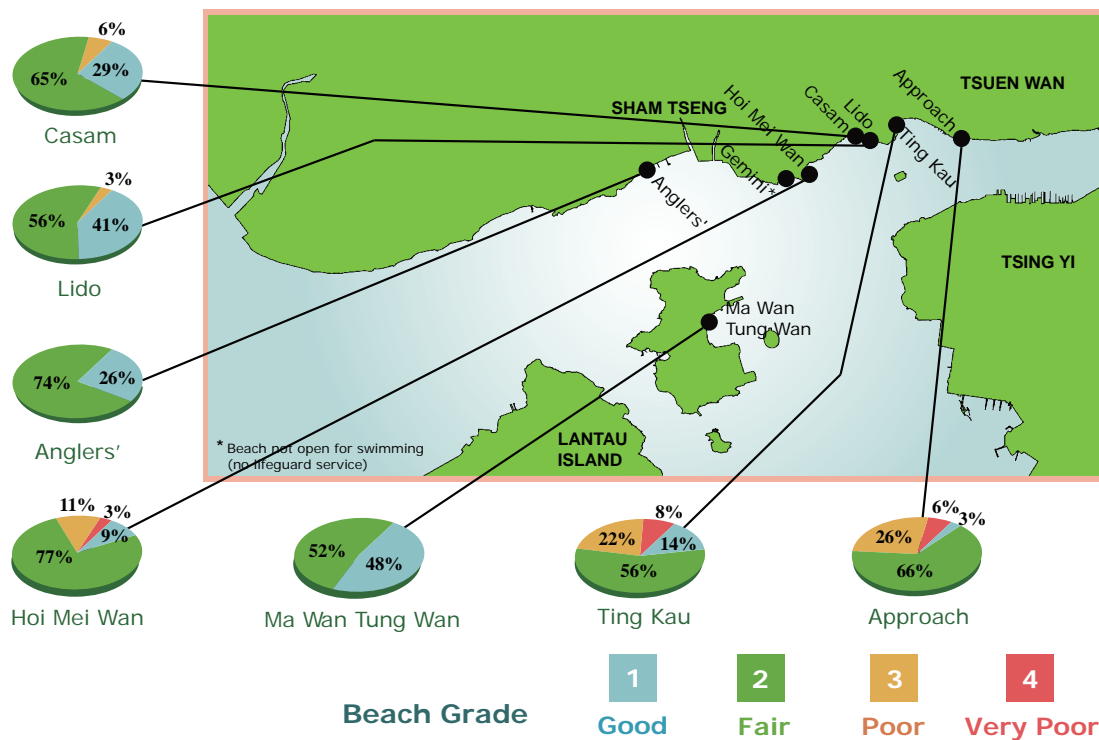
### Annual ranking



Annual Rank

Color	Rank
Blue	Good
Green	Fair
Orange	Poor
Red	Very Poor

### Weekly grading



Note: Figures may not add up to 100% due to roundings; “\*” Beach not open for swimming. No grading was provided.

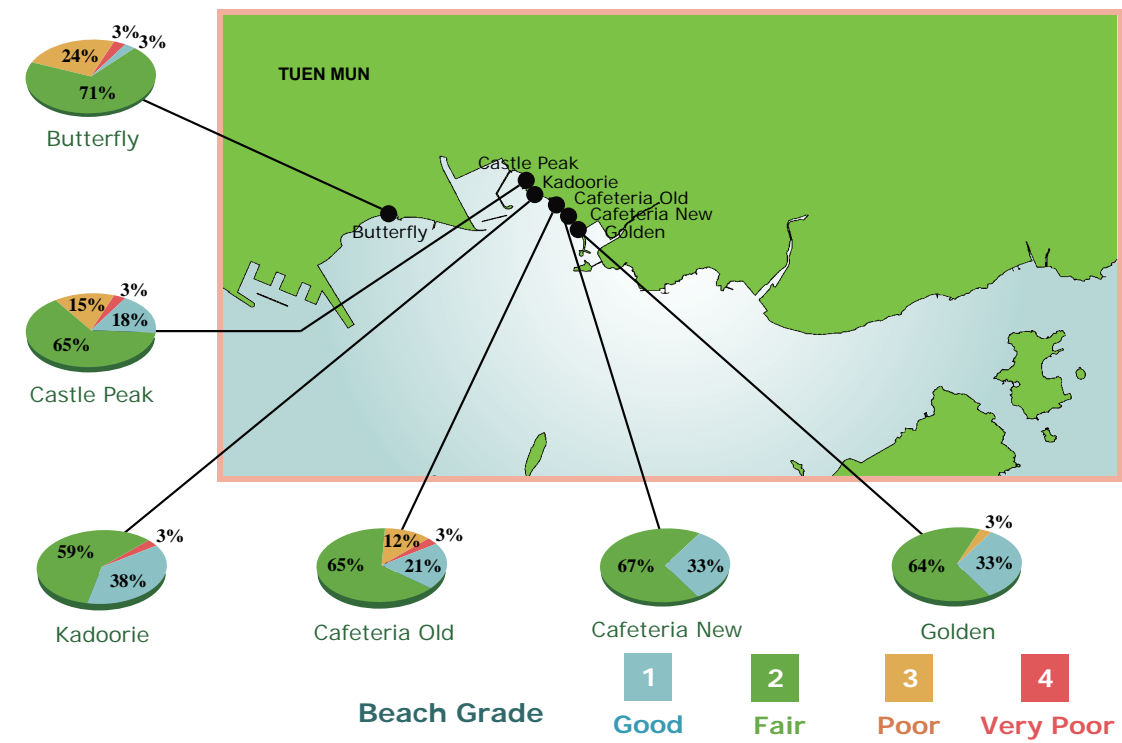


Tuen Mun beaches

Annual ranking



Weekly grading



Note: Figures may not add up to 100% due to roundings



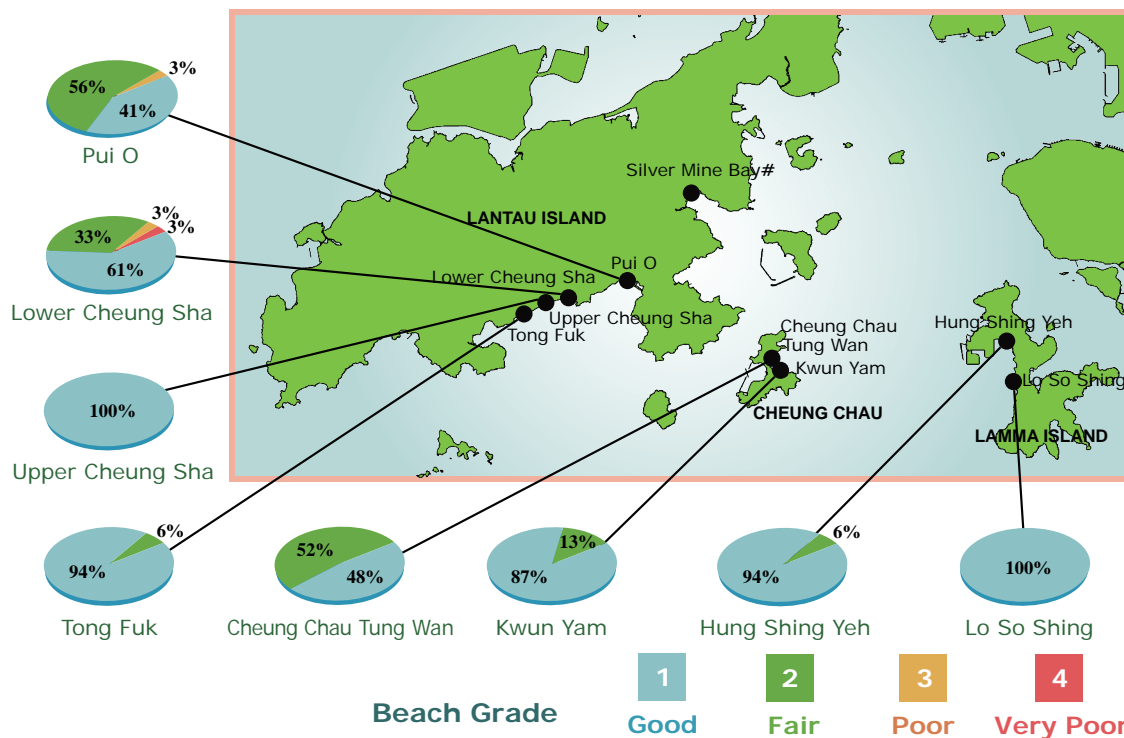


## Outlying Islands beaches

### Annual ranking



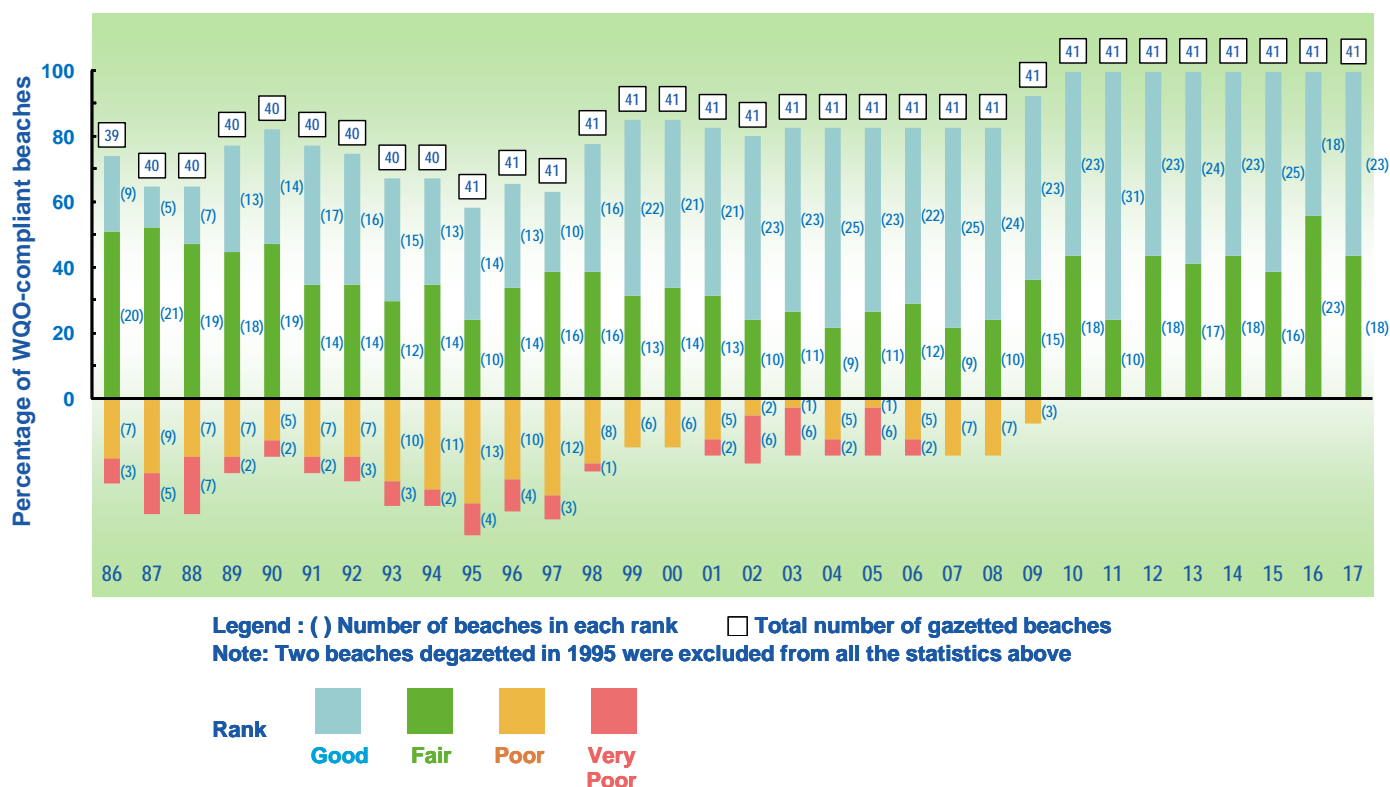
### Weekly grading



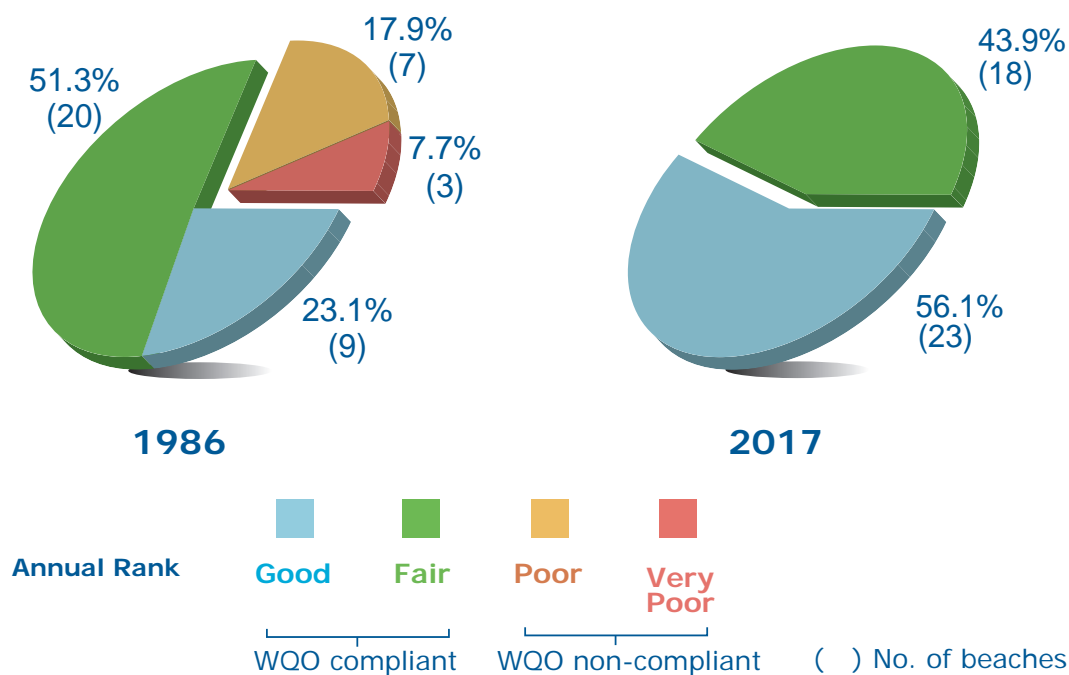
Note: Figures may not add up to 100% due to roundings; “#” Temporarily closed for improvement works



## Annual beach rankings of gazetted beaches from 1986 to 2017



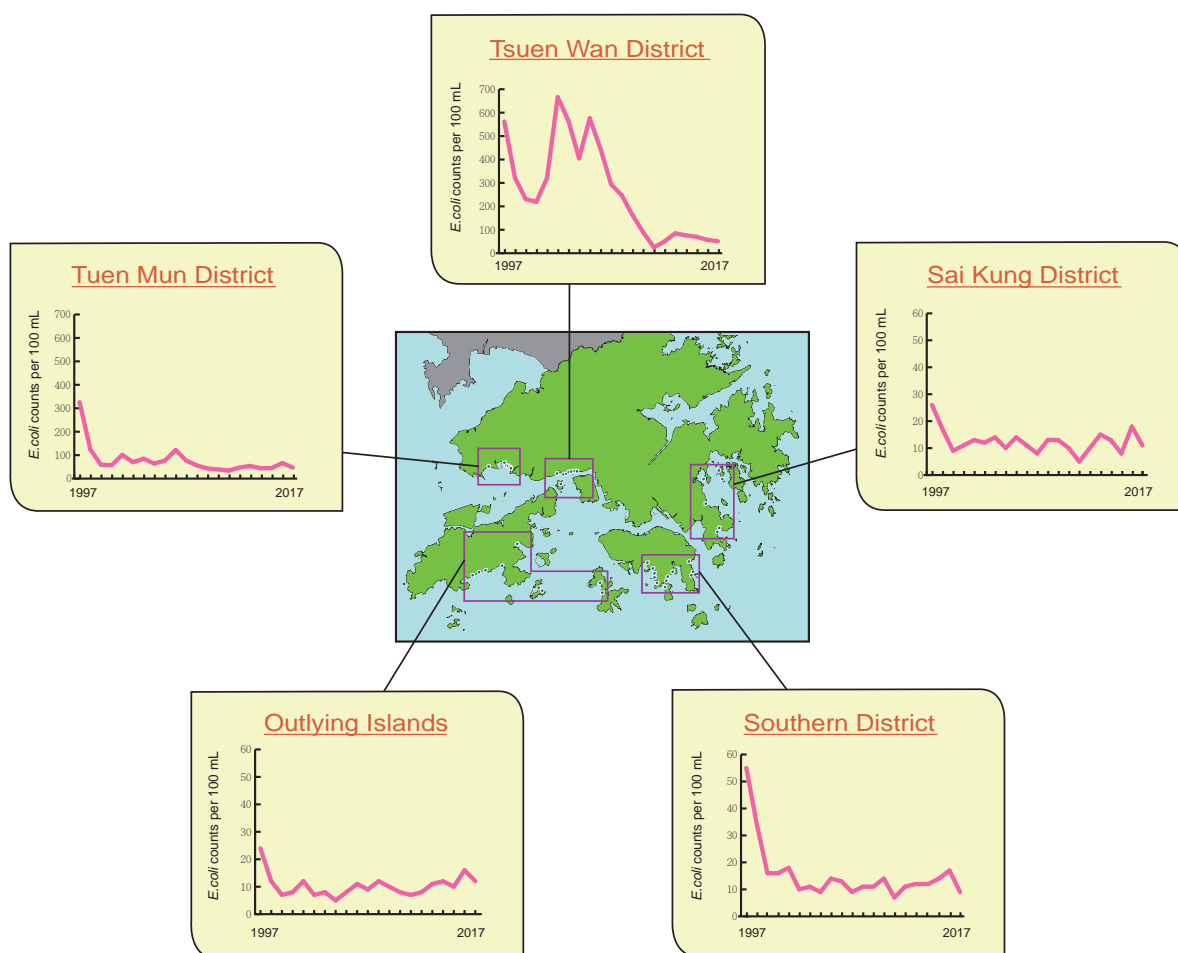
## Comparison of annual beach ranking of gazetted beaches in 1986 and 2017



Note: Two beaches degazetted in 1995 were excluded from all the statistics above



## Annual geometric mean *E. coli* levels of gazetted beaches by district, 1997 - 2017



## Appendix A - Annual geometric mean *E. coli* levels (1997-2017)

### Southern District

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

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

Beach	<i>E. coli</i> counts per 100mL										
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Big Wave Bay	17	31	46	149	17	31	21	40	21	78	36
Chung Hom Kok	9	13	14	9	5	5	8	13	13	6	6
Deep Water Bay	7	9	12	9	6	9	11	14	19	24	14
Hairpin	19*	10*	12*	33*	6*	9*	14*	12*	8*	17*	5*
Middle Bay	9	11	12	12	6	15	14	13	13	20	14
Repulse Bay	7	14	11	7	6	7	10	11	14	10	5
Rocky Bay	17*	15*	13*	50*	23*	30*	22*	16*	35*	47*	18*
Shek O	18	22	11	19	11	16	15	18	29	26	16
South Bay	5	5	4	4	4	5	4	5	9	5	3
St. Stephen's	6	9	6	4	4	4	10	5	6	7	4
Stanley Main	9	10	13	20	6	34	19	9	20	23	8
Turtle Cove	5	5	5	8	4	6	6	8	5	11	5

Note: \* Beach not open for swimming that year





## Sai Kung District

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

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

Beach	<i>E. coli</i> counts per 100mL										
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Clear Water Bay First	14	11	15	10	7	8	24	15	14	31	20
Clear Water Bay Second	9	19	27	13	5	18	15	18	17	32	16
Hap Mun Bay	3	5	3	3	2	2	7	4	2	4	3
Kiu Tsui	6	13	16	13	9	10	13	11	6	10	5
Silverstrand	33	35	51	28	18	30	39	40	18	63	56
Trio	2	12	5	6	2	9	8	10	4	13	7

## Tsuen Wan District

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

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

Beach	<i>E. coli</i> counts per 100mL										
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Anglers'	496*	510*	276*	134*	27*	69*	133	130	77	76	45
Approach	352*	251*	208*	124*	59	83	106	121	143	78	114
Casam	305*	289*	144*	102*	21	50	71	63	52	42	43
Gemini	566*	481*	410*	137*	19*	40*	135*	110*	56*	40*	39*
Hoi Mei Wan	286*	271*	130*	87*	23	51	86	58	90	65	63
Lido	280*	296*	178*	87*	21	32	53	57	52	39	34
Ma Wan Tung Wan	78	53	60	17	10	24	41	31	20	32	29
Ting Kau	405*	258*	145*	141*	58*	88*	107*	89	151	140	75

Note: \* Beach not open for swimming that year



## Tuen Mun District

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

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

Beach	<i>E. coli</i> counts per 100mL										
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Butterfly	84	56	49	30	41	42	71	38	98	131	81
Cafeteria New	68	48	38	31	27	47	50	31	30	38	31
Cafeteria Old	67	45	46	34	29	48	39	45	41	70	50
Castle Peak	64	47	35	63	49	48	78	91	71	106	65
Golden	87	63	42	37	26	62	45	39	31	45	37
Kadoorie	101	87	48	45	37	40	52	37	29	48	31

Note: \* Beach not open for swimming that year

## Outlying Islands

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

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

Beach	<i>E. coli</i> counts per 100mL										
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Cheung Chau Tung Wan	21	15	17	12	6	13	10	14	19	9	18
Hung Shing Yeh	6	4	6	4	3	4	4	5	4	6	5
Kwun Yam	9	10	9	8	5	5	9	8	12	12	9
Lo So Shing	3	5	7	3	3	4	5	5	4	6	6
Lower Cheung Sha	12	20	13	11	9	10	17	21	17	47	19
Pui O	30	24	12	14	13	22	51	60	24	29	34
Silver Mine Bay	22	43	45	31	28	38	39	51	59	119	141*
Tong Fuk	4	10	5	5	4	4	7	4	4	9	3
Upper Cheung Sha	4	7	5	4	3	4	4	5	3	7	3

Note: \* Beach not open for swimming that year





## Appendix B - 2017 Beach visitor number

### Southern District

#### Visitor numbers during the 2017 bathing season

Beach	Daily average		Peak day	Peak month	Total
	Weekdays	Weekends & public holidays			
Big Wave Bay	237	1 085	2 500	21 320	124 260
Chung Hom Kok	138	601	2 250	12 780	69 990
Deep Water Bay	825	4 312	13 500	91 100	474 050
Hairpin	131	261	500	7 110	42 260
Middle Bay	171	280	600	8 020	50 440
Repulse Bay	11 860	14 074	36 000	403 010	3 078 420
Rocky Bay	-	-	-	-	-
Shek O	2 322	5 914	22 000	220 100	849 160
South Bay	134	374	1 000	9 100	51 540
St. Stephen's	189	335	800	9 800	57 600
Stanley Main	756	2 407	17 800	65 950	314 030
Turtle Cove	55	391	2 200	7 120	39 645

Note: Information provided by the Leisure and Cultural Services Department



## Sai Kung District

### Visitor numbers during the 2017 bathing season

Beach	Daily average		Peak day	Peak month	Total
	Weekdays	Weekends & public holidays			
Clear Water Bay First	153	553	2 500	13 690	68 730
Clear Water Bay Second	2 085	4 127	20 000	200 010	670 110
Hap Mun Bay	436	1 103	3 750	46 440	158 800
Kiu Tsui	252	754	1 590	15 000	100 920
Silverstrand	133	700	5 260	20 240	76 720
Trio	258	710	3 220	20 720	98 430

Note: Information provided by the Leisure and Cultural Services Department

## Tsuen Wan District

### Visitor numbers during the 2017 bathing season

Beach	Daily average		Peak day	Peak month	Total
	Weekdays	Weekends & public holidays			
Anglers'	150	558	1 060	9 960	68 610
Approach	166	242	460	8 010	46 610
Casam	76	194	500	5 340	27 830
Gemini	18	34	150	860	5 640
Hoi Mei Wan	49	163	880	3 490	20 930
Lido	357	1 026	9 900	23 070	139 560
Ma Wan Tung Wan	525	2 023	4 310	44 310	245 470
Ting Kau	136	354	1 650	9 300	50 360

Note: Information provided by the Leisure and Cultural Services Department





## Tuen Mun District Visitor numbers during the 2017 bathing season

Beach	Daily average		Peak day	Peak month	Total
	Weekdays	Weekends & public holidays			
Butterfly	795	1 392	2 200	34 800	241 400
Cafeteria New	963	1 614	3 900	63 900	286 670
Cafeteria Old	950	1 304	2 160	39 720	260 320
Castle Peak	705	742	2 000	24 590	175 615
Golden	1 985	4 316	8 000	104 800	668 150
Kadoorie	668	856	1 400	30 900	178 300

Note: Information provided by the Leisure and Cultural Services Department

## Outlying Islands Visitor numbers during the 2017 bathing season

Beach	Daily average		Peak day	Peak month	Total
	Weekdays	Weekends & public holidays			
Cheung Chau Tung Wan	506	2 089	4 000	46 300	247 460
Hung Shing Yeh	576	1 311	3 030	40 400	198 520
Kwun Yam	192	524	1 250	14 000	72 900
Lo So Shing	145	355	650	9 610	51 930
Lower Cheung Sha	356	1 303	2 800	30 800	161 100
Pui O	1 148	2 701	8 750	88 060	402 290
Silver Mine Bay	-	-	-	-	-
Tong Fuk	359	489	1 450	25 880	97 980
Upper Cheung Sha	505	723	1 600	30 020	140 750

Note: Information provided by the Leisure and Cultural Services Department



## Appendix C - Physicochemical water quality data for gazetted beaches, 2017

### Southern District

#### Summary of physicochemical water quality data of gazetted beaches, 2017

Beach	pH	Salinity (psu) <sup>1</sup>	Turbidity (NTU) <sup>2</sup>	Temperature (°C)	Dissolved Oxygen (mg/L) (% Saturation)	
Big Wave Bay	8.30 ( 8.13 - 8.59 )	28.8 ( 18.6 - 32.7 )	2.95 ( 0.56 - 8.65 )	26.5 ( 18.2 - 31.1 )	6.9 ( 5.7 - 8.3 )	97 ( 85 - 114 )
Chung Hom Kok	8.29 ( 8.01 - 8.73 )	29.1 ( 19.0 - 32.7 )	3.00 ( 1.14 - 8.26 )	26.9 ( 19.0 - 31.2 )	6.8 ( 5.5 - 8.8 )	97 ( 83 - 119 )
Deep Water Bay	8.26 ( 7.97 - 8.61 )	28.0 ( 17.6 - 32.7 )	4.07 ( 1.15 - 10.20 )	27.3 ( 19.3 - 31.8 )	6.9 ( 5.4 - 8.5 )	99 ( 83 - 126 )
Hairpin*	8.36 ( 8.16 - 8.71 )	29.4 ( 20.3 - 33.2 )	1.87 ( 0.48 - 7.59 )	27.4 ( 19.2 - 32.3 )	7.1 ( 5.6 - 10.0 )	102 ( 82 - 130 )
Middle Bay	8.31 ( 8.06 - 8.75 )	28.6 ( 15.3 - 32.7 )	3.52 ( 0.96 - 9.12 )	26.7 ( 18.4 - 30.9 )	7.0 ( 5.5 - 9.0 )	99 ( 78 - 130 )
Repulse Bay	8.31 ( 8.10 - 8.72 )	29.3 ( 20.0 - 32.8 )	3.41 ( 0.97 - 15.50 )	26.6 ( 18.5 - 30.9 )	6.9 ( 5.6 - 8.3 )	97 ( 82 - 117 )
Rocky Bay*	8.27 ( 8.07 - 8.59 )	30.6 ( 23.1 - 32.9 )	2.76 ( 0.68 - 10.60 )	26.2 ( 18.6 - 31.4 )	6.7 ( 4.9 - 9.8 )	94 ( 74 - 130 )
Shek O	8.31 ( 8.10 - 8.60 )	30.5 ( 24.3 - 33.2 )	3.56 ( 0.71 - 10.10 )	26.5 ( 18.6 - 31.3 )	6.7 ( 5.5 - 9.8 )	96 ( 79 - 129 )
South Bay	8.30 ( 8.01 - 8.68 )	29.2 ( 20.4 - 32.6 )	2.65 ( 0.75 - 10.90 )	26.8 ( 18.9 - 31.0 )	6.8 ( 5.1 - 8.8 )	98 ( 75 - 130 )
St. Stephen's	8.28 ( 8.05 - 8.62 )	29.0 ( 17.6 - 32.9 )	2.60 ( 0.74 - 7.24 )	27.0 ( 18.8 - 31.3 )	6.7 ( 5.2 - 8.5 )	96 ( 77 - 122 )
Stanley Main	8.35 ( 8.14 - 8.70 )	29.1 ( 19.6 - 33.2 )	2.56 ( 0.93 - 8.06 )	27.2 ( 19.4 - 31.7 )	7.1 ( 5.3 - 9.7 )	101 ( 77 - 130 )
Turtle Cove	8.34 ( 8.15 - 8.63 )	29.0 ( 20.2 - 32.7 )	4.05 ( 0.74 - 15.60 )	27.2 ( 19.0 - 31.7 )	7.0 ( 5.6 - 9.9 )	100 ( 82 - 130 )

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

1. Practical Salinity Unit; 2. Nephelometric Turbidity Unit

\* Beach not open for swimming (no lifeguard service)





## Sai Kung District

### Summary of physicochemical water quality data of gazetted beaches, 2017

Beach	pH	Salinity (psu) <sup>1</sup>	Turbidity (NTU) <sup>2</sup>	Temperature (°C)	Dissolved Oxygen (mg/L) (% Saturation)	
Clear Water Bay First	8.34 ( 8.20 - 8.81 )	29.5 ( 20.8 - 32.5 )	5.20 ( 0.77 - 18.60 )	27.1 ( 18.2 - 32.5 )	6.7 ( 5.2 - 8.5 )	97 ( 80 - 121 )
Clear Water Bay Second	8.32 ( 8.17 - 8.79 )	30.6 ( 20.8 - 33.3 )	6.15 ( 1.28 - 20.20 )	27.1 ( 18.0 - 32.4 )	6.5 ( 4.4 - 7.8 )	95 ( 75 - 108 )
Hap Mun Bay	8.32 ( 8.19 - 8.71 )	30.4 ( 23.0 - 33.0 )	3.63 ( 0.54 - 14.50 )	27.4 ( 17.9 - 31.9 )	6.6 ( 5.6 - 8.3 )	97 ( 82 - 113 )
Kiu Tsui	8.30 ( 8.06 - 8.69 )	29.7 ( 22.0 - 33.1 )	1.66 ( 0.60 - 4.82 )	27.4 ( 17.4 - 32.1 )	6.7 ( 5.1 - 8.7 )	98 ( 77 - 120 )
Silverstrand	8.35 ( 8.12 - 8.72 )	28.1 ( 16.3 - 32.2 )	4.15 ( 0.94 - 23.30 )	26.7 ( 17.5 - 31.3 )	6.6 ( 5.5 - 8.1 )	95 ( 84 - 106 )
Trio	8.29 ( 8.12 - 8.64 )	28.8 ( 16.3 - 32.7 )	2.26 ( 0.66 - 5.74 )	27.6 ( 18.1 - 33.1 )	6.7 ( 5.4 - 8.3 )	98 ( 81 - 125 )

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

1. Practical Salinity Unit; 2. Nephelometric Turbidity Unit

## Tsuen Wan District

### Summary of physicochemical water quality data of gazetted beaches, 2017

Beach	pH	Salinity (psu) <sup>1</sup>	Turbidity (NTU) <sup>2</sup>	Temperature (°C)	Dissolved Oxygen (mg/L) (% Saturation)	
Anglers'	8.14 ( 7.94 - 8.34 )	26.4 ( 14.0 - 32.5 )	3.83 ( 1.76 - 10.80 )	26.0 ( 18.1 - 31.2 )	6.8 ( 5.1 - 9.6 )	92 ( 71 - 109 )
Approach	8.15 ( 7.88 - 8.31 )	25.3 ( 18.1 - 32.3 )	4.71 ( 1.04 - 11.80 )	26.1 ( 17.8 - 31.0 )	6.7 ( 4.2 - 9.1 )	93 ( 60 - 112 )
Casam	8.15 ( 7.95 - 8.34 )	26.0 ( 18.3 - 32.5 )	3.22 ( 1.24 - 6.53 )	26.1 ( 17.8 - 30.8 )	6.6 ( 5.0 - 8.1 )	93 ( 73 - 108 )
Gemini*	8.12 ( 7.91 - 8.29 )	26.9 ( 15.5 - 32.5 )	3.59 ( 1.38 - 8.52 )	25.9 ( 18.1 - 30.4 )	6.5 ( 4.9 - 8.2 )	90 ( 61 - 114 )
Hoi Mei Wan	8.14 ( 7.91 - 8.34 )	25.8 ( 18.6 - 32.5 )	3.19 ( 1.31 - 6.64 )	26.2 ( 18.0 - 30.7 )	6.6 ( 4.6 - 8.5 )	92 ( 61 - 117 )
Lido	8.14 ( 7.96 - 8.30 )	26.2 ( 18.5 - 32.5 )	3.38 ( 1.28 - 7.56 )	26.1 ( 18.0 - 30.9 )	6.5 ( 4.8 - 8.3 )	90 ( 59 - 107 )
Ma Wan Tung Wan	8.12 ( 7.87 - 8.40 )	27.2 ( 16.8 - 32.6 )	4.41 ( 2.16 - 7.61 )	26.6 ( 18.4 - 30.5 )	6.5 ( 4.3 - 8.2 )	93 ( 64 - 121 )
Ting Kau	8.15 ( 7.91 - 8.34 )	24.8 ( 15.6 - 32.1 )	3.33 ( 1.09 - 6.79 )	26.3 ( 17.8 - 31.0 )	6.7 ( 4.9 - 8.6 )	94 ( 70 - 110 )

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

1. Practical Salinity Unit; 2. Nephelometric Turbidity Unit

\* Beach not open for swimming (no lifeguard service)



## Tuen Mun District

### Summary of physicochemical water quality data of gazetted beaches, 2017

Beach	pH	Salinity (psu) <sup>1</sup>	Turbidity (NTU) <sup>2</sup>	Temperature (°C)	Dissolved Oxygen (mg/L) (% Saturation)	
Butterfly	8.13 ( 7.75 - 8.38 )	22.8 ( 10.0 - 32.4 )	9.77 ( 3.22 - 27.10 )	27.3 ( 19.1 - 31.9 )	6.6 ( 5.0 - 8.1 )	93 ( 75 - 109 )
Cafeteria New	8.12 ( 7.83 - 8.33 )	22.3 ( 10.2 - 32.3 )	9.02 ( 4.79 - 18.30 )	27.2 ( 18.7 - 31.1 )	6.5 ( 5.1 - 7.9 )	93 ( 70 - 113 )
Cafeteria Old	8.12 ( 7.82 - 8.35 )	21.8 ( 9.2 - 32.3 )	9.05 ( 3.61 - 21.30 )	27.1 ( 18.7 - 31.5 )	6.5 ( 5.1 - 7.7 )	91 ( 69 - 104 )
Castle Peak	8.16 ( 7.80 - 8.56 )	21.8 ( 8.9 - 31.9 )	5.37 ( 1.54 - 11.50 )	27.4 ( 18.9 - 32.1 )	6.9 ( 5.2 - 10.0 )	98 ( 70 - 130 )
Golden	8.13 ( 7.87 - 8.34 )	22.4 ( 10.5 - 32.4 )	10.51 ( 4.65 - 32.80 )	27.1 ( 18.9 - 30.9 )	6.6 ( 5.2 - 8.9 )	93 ( 73 - 112 )
Kadoorie	8.14 ( 7.86 - 8.37 )	22.1 ( 9.3 - 32.3 )	6.05 ( 2.49 - 13.90 )	27.3 ( 18.7 - 31.5 )	6.6 ( 5.1 - 9.8 )	94 ( 70 - 124 )

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

1. Practical Salinity Unit; 2. Nephelometric Turbidity Unit

## Outlying Islands

### Summary of physicochemical water quality data of gazetted beaches, 2017

Beach	pH	Salinity (psu) <sup>1</sup>	Turbidity (NTU) <sup>2</sup>	Temperature (°C)	Dissolved Oxygen (mg/L) (% Saturation)	
Cheung Chau Tung Wan	8.22 ( 8.03 - 8.91 )	27.5 ( 17.9 - 32.5 )	3.93 ( 1.03 - 12.80 )	26.0 ( 18.3 - 30.6 )	6.9 ( 5.2 - 8.9 )	96 ( 77 - 126 )
Hung Shing Yeh	8.24 ( 8.05 - 8.61 )	27.4 ( 15.7 - 32.6 )	5.85 ( 1.52 - 20.30 )	26.4 ( 17.9 - 31.7 )	6.8 ( 5.7 - 8.2 )	96 ( 81 - 127 )
Kwun Yam	8.21 ( 8.01 - 8.76 )	27.1 ( 17.7 - 32.3 )	4.06 ( 1.12 - 18.80 )	26.1 ( 18.2 - 30.5 )	6.9 ( 5.4 - 9.2 )	95 ( 82 - 112 )
Lo So Shing	8.29 ( 8.06 - 8.85 )	28.1 ( 14.6 - 32.6 )	3.64 ( 1.20 - 14.80 )	26.7 ( 17.9 - 31.2 )	6.9 ( 5.4 - 8.1 )	96 ( 82 - 122 )
Lower Cheung Sha	8.30 ( 8.12 - 8.77 )	27.2 ( 14.7 - 32.1 )	9.31 ( 1.69 - 31.10 )	27.6 ( 19.1 - 33.5 )	6.6 ( 5.3 - 7.9 )	95 ( 85 - 113 )
Pui O	8.31 ( 8.14 - 8.76 )	26.8 ( 15.9 - 32.2 )	11.93 ( 4.23 - 31.50 )	28.1 ( 19.2 - 34.4 )	6.7 ( 5.5 - 8.3 )	97 ( 84 - 129 )
Silver Mine Bay**	8.26 ( 8.02 - 8.92 )	24.1 ( 7.5 - 32.1 )	10.95 ( 2.75 - 52.10 )	27.7 ( 18.9 - 32.5 )	6.5 ( 4.5 - 8.1 )	93 ( 64 - 115 )
Tong Fuk	8.28 ( 8.06 - 8.69 )	27.2 ( 13.9 - 32.4 )	7.33 ( 1.82 - 37.40 )	27.7 ( 18.3 - 32.7 )	6.6 ( 5.6 - 7.8 )	95 ( 85 - 102 )
Upper Cheung Sha	8.30 ( 8.12 - 8.71 )	27.2 ( 14.1 - 32.5 )	7.45 ( 1.51 - 37.30 )	27.7 ( 18.6 - 33.1 )	6.6 ( 5.7 - 7.4 )	95 ( 80 - 105 )

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

1. Practical Salinity Unit; 2. Nephelometric Turbidity Unit

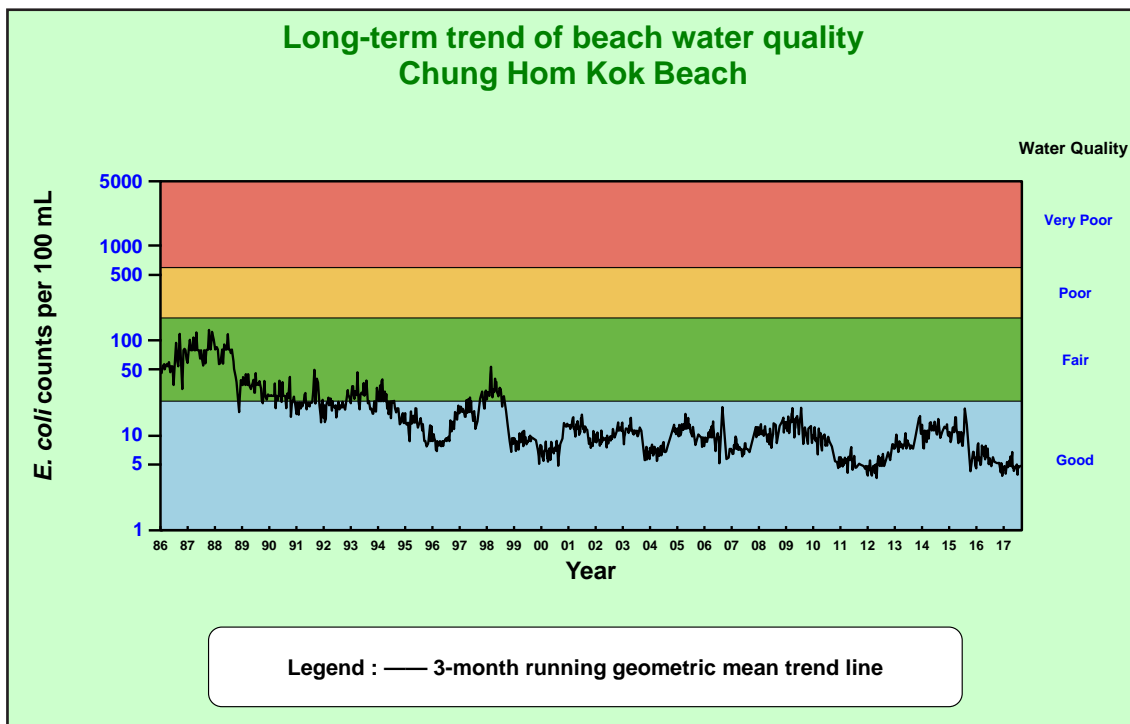
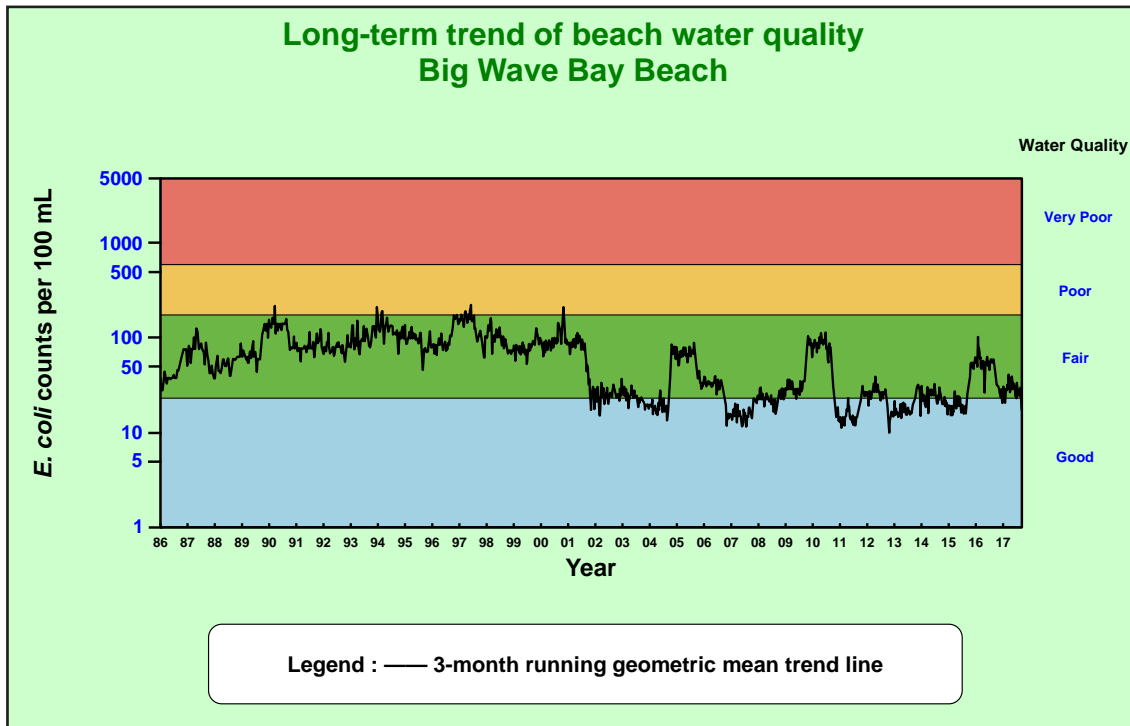
\*\* Temporarily closed for improvement works

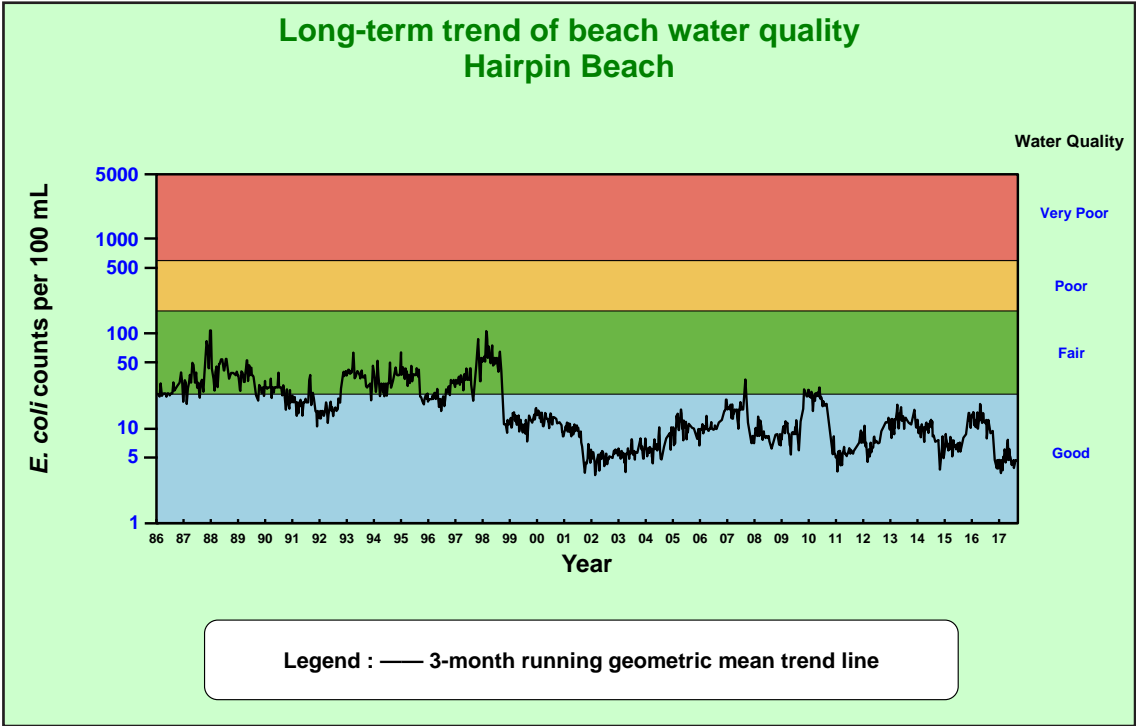
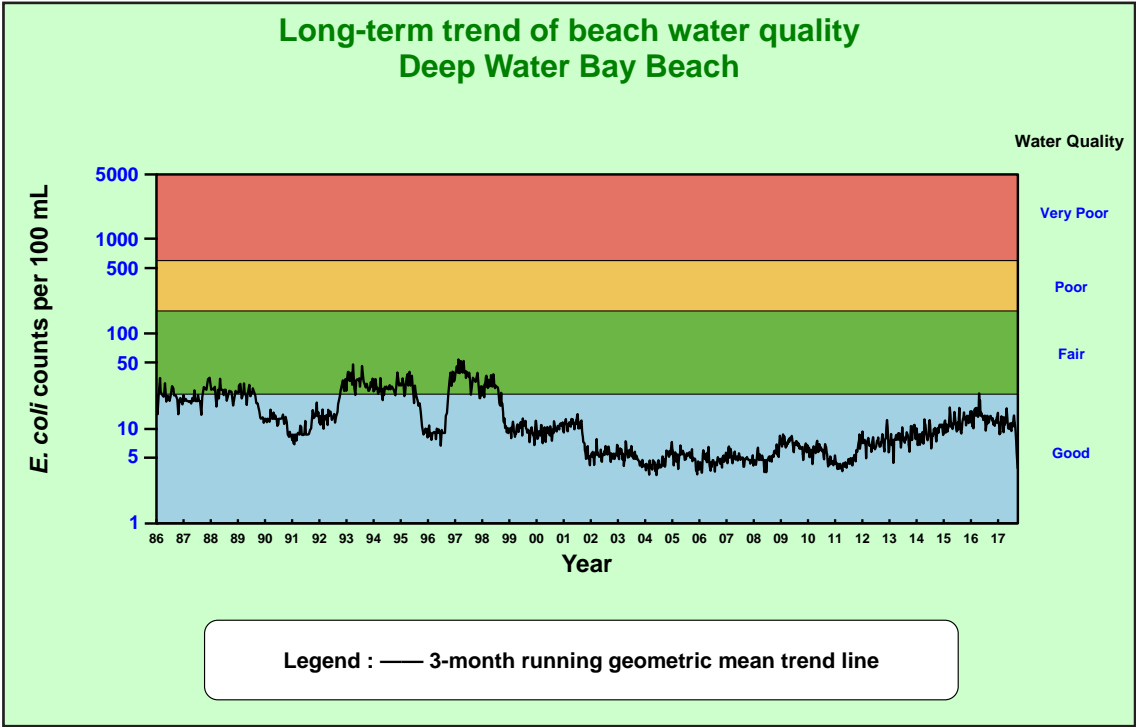




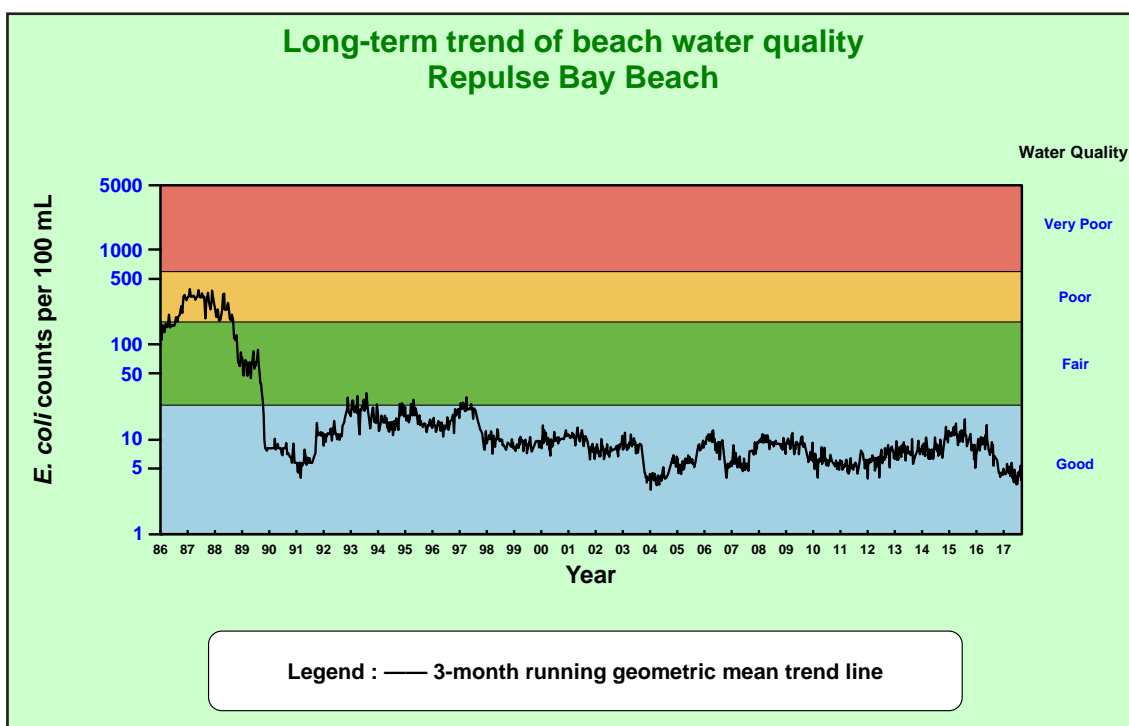
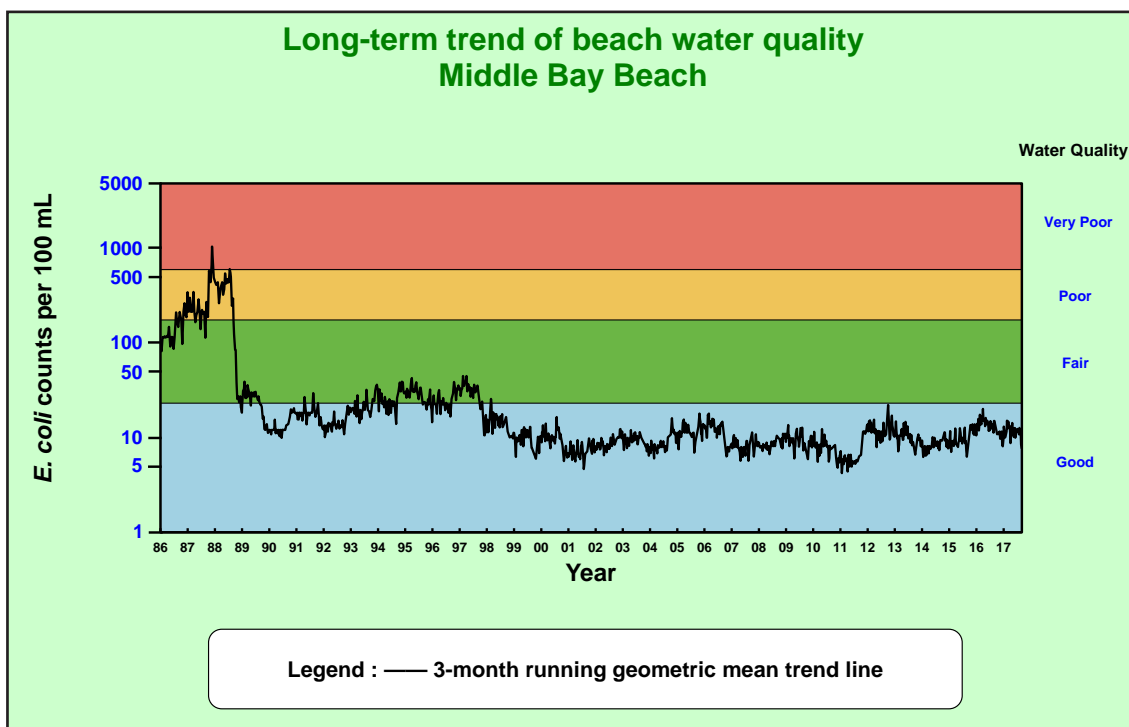
## Appendix D - Long-term trend of beach water quality (1986 - 2017)

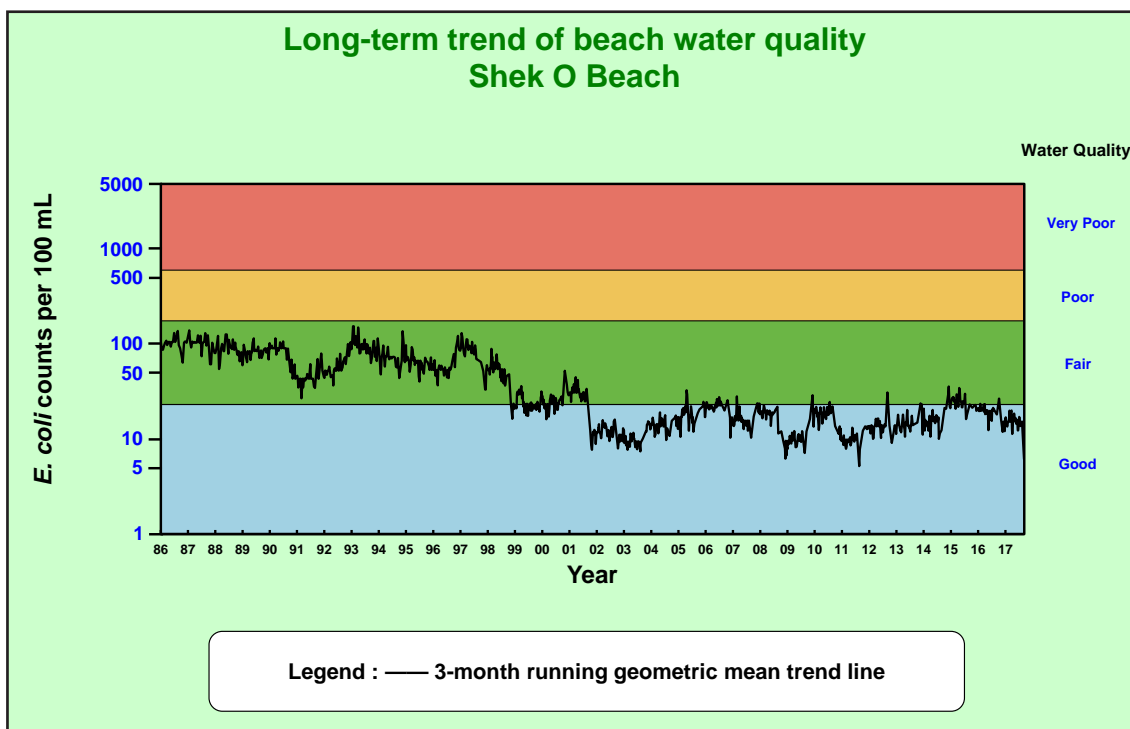
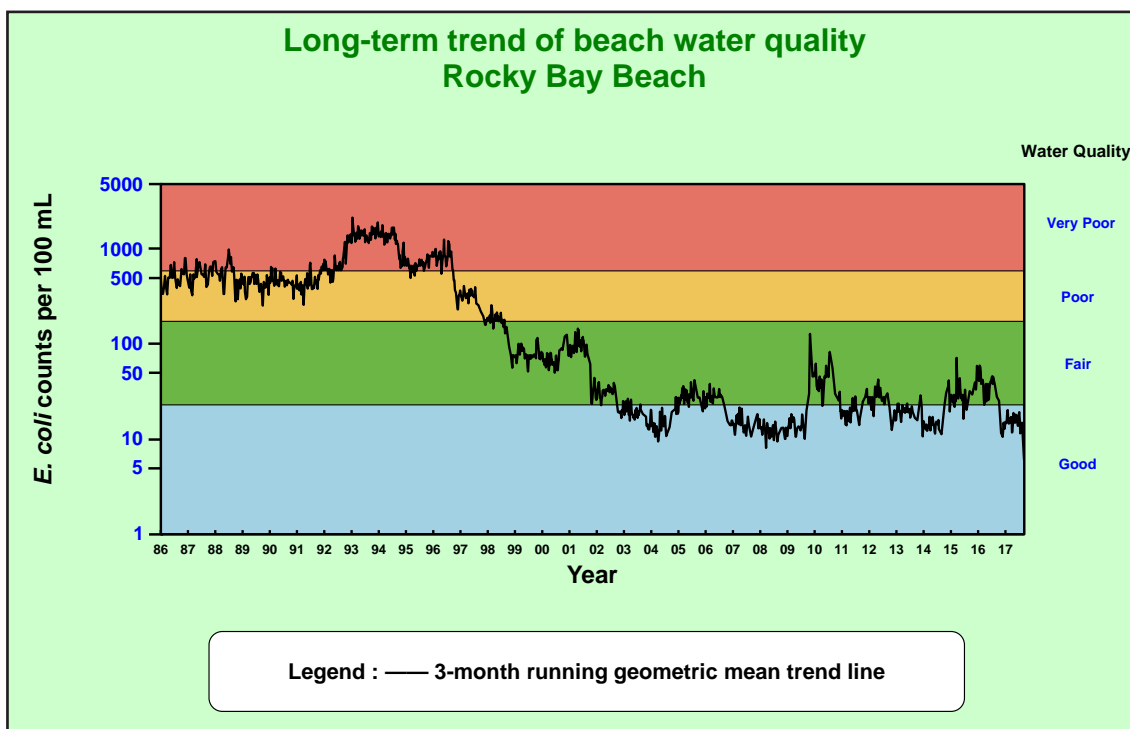
### Southern District



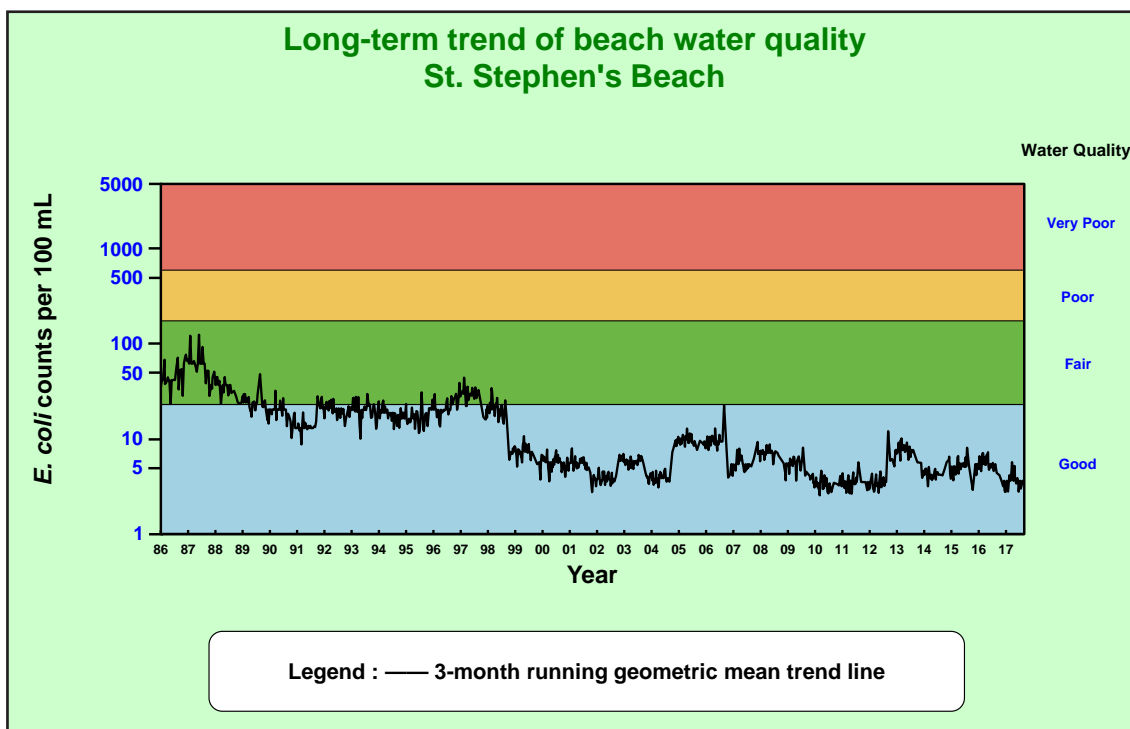
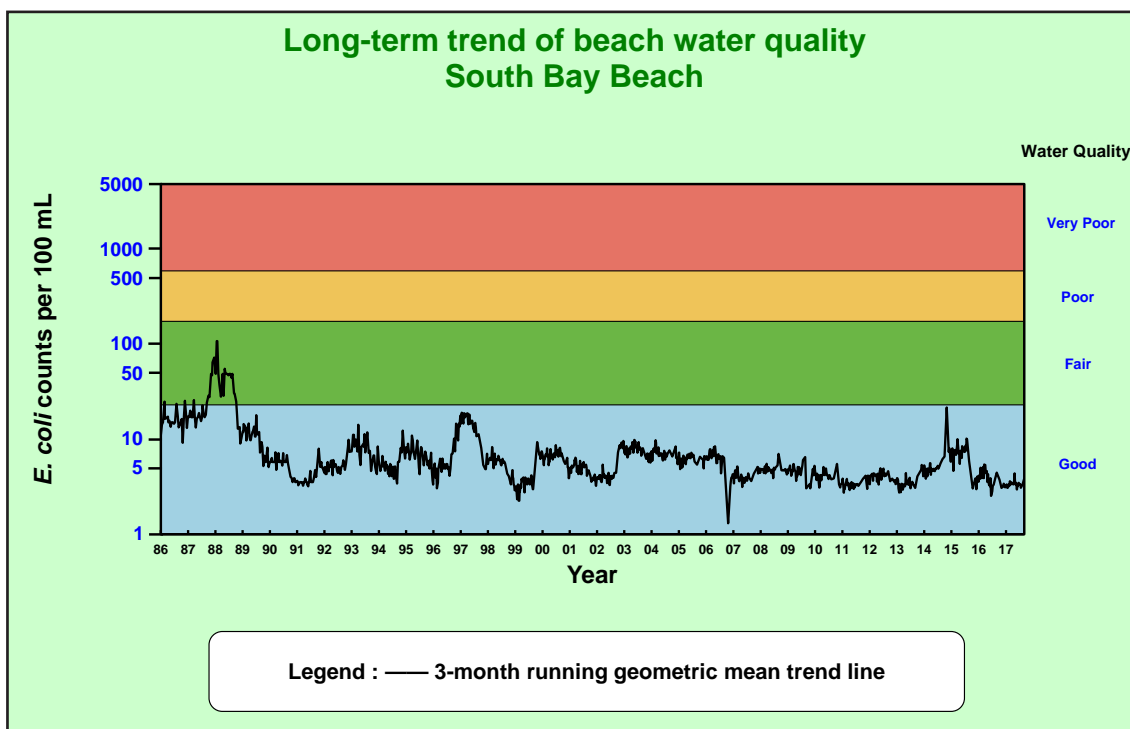


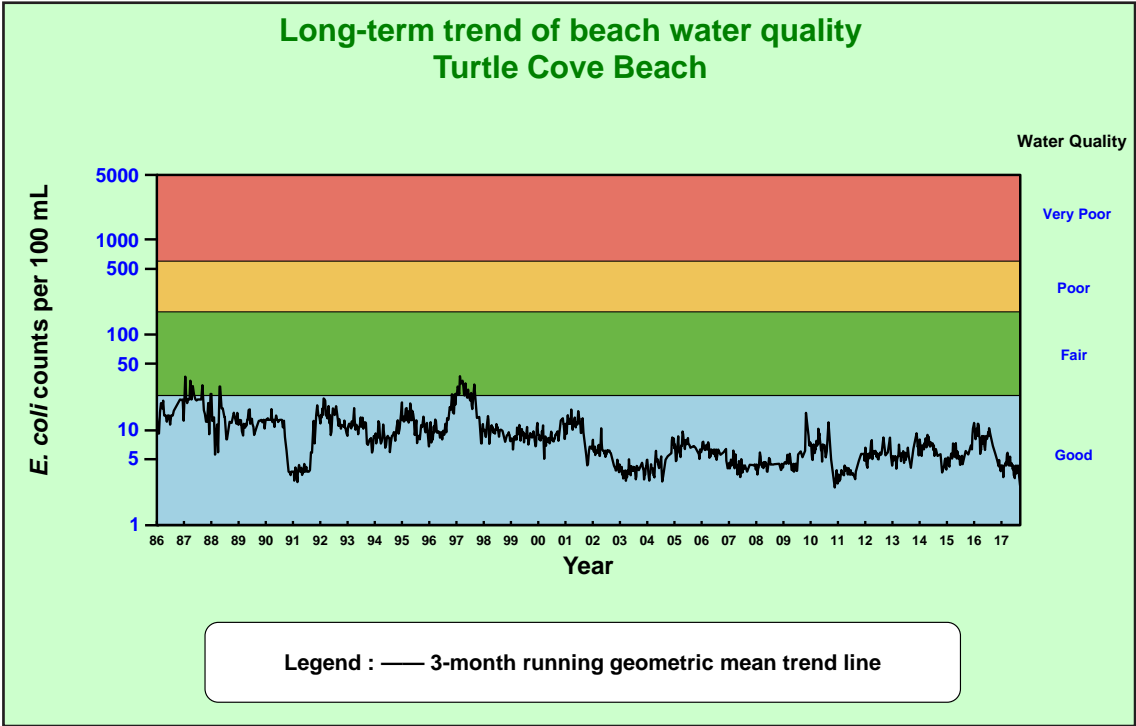
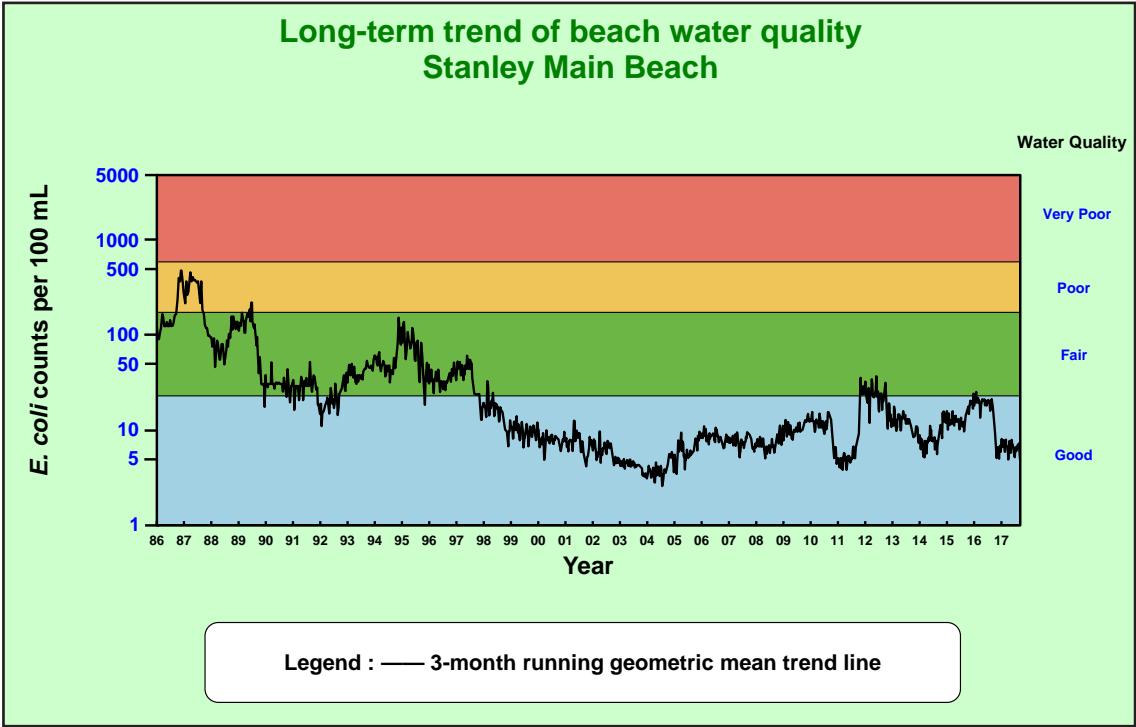






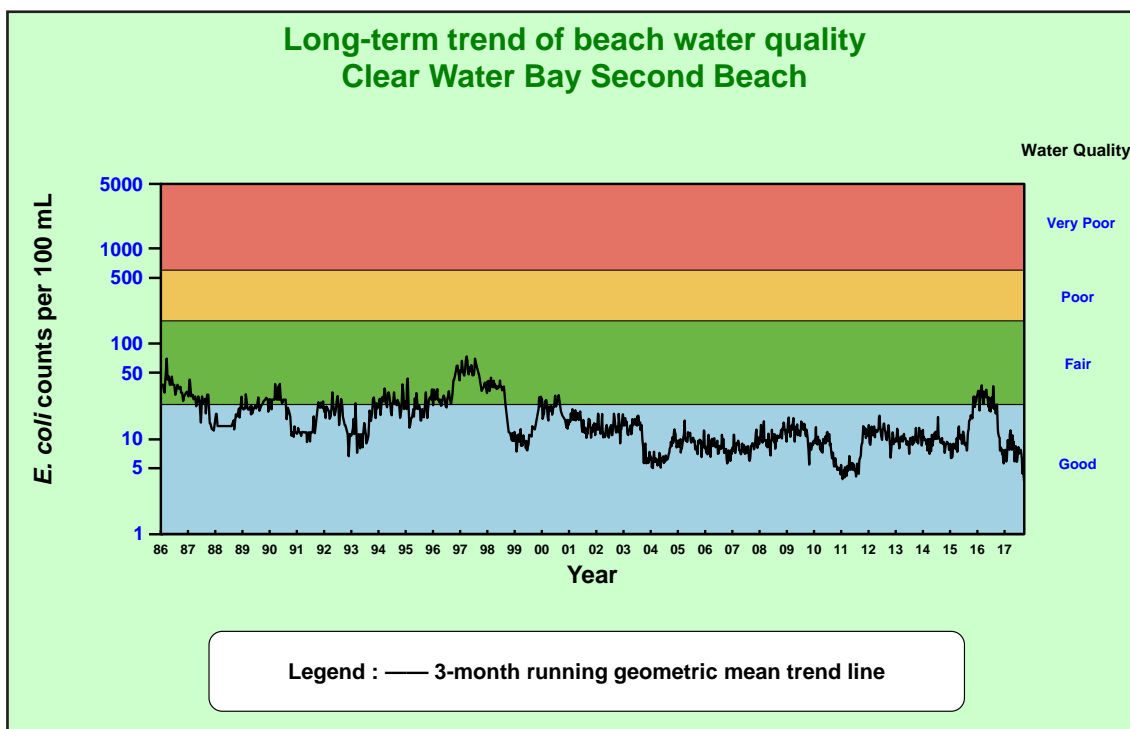
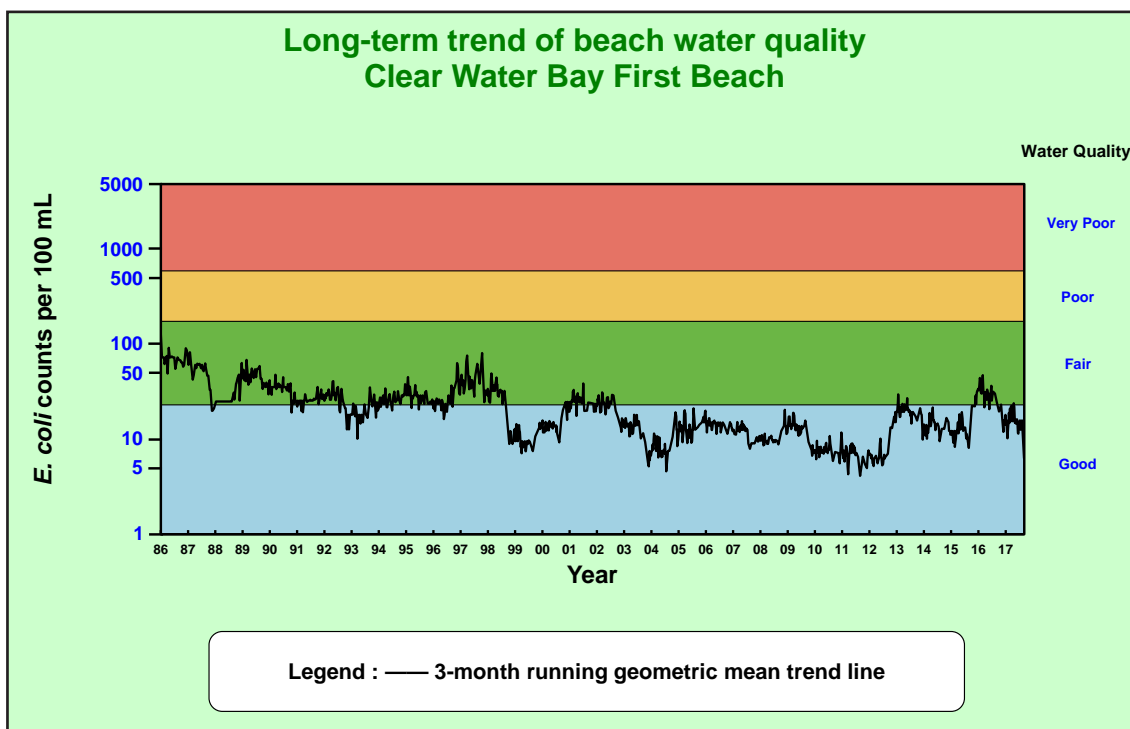


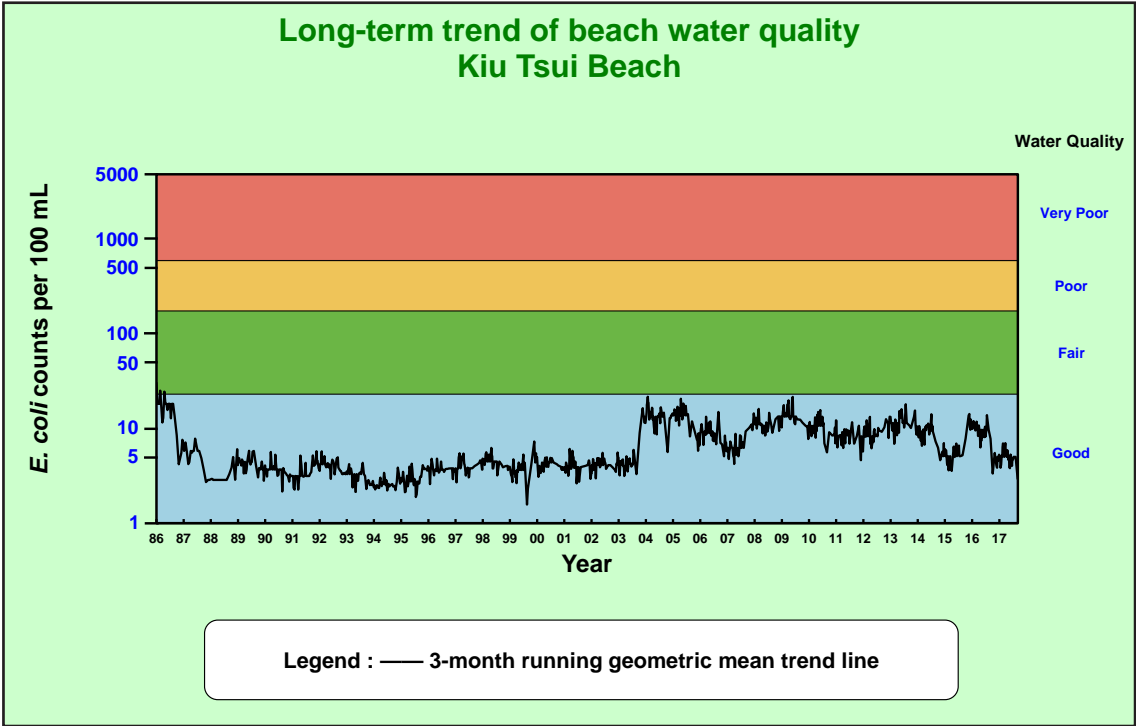
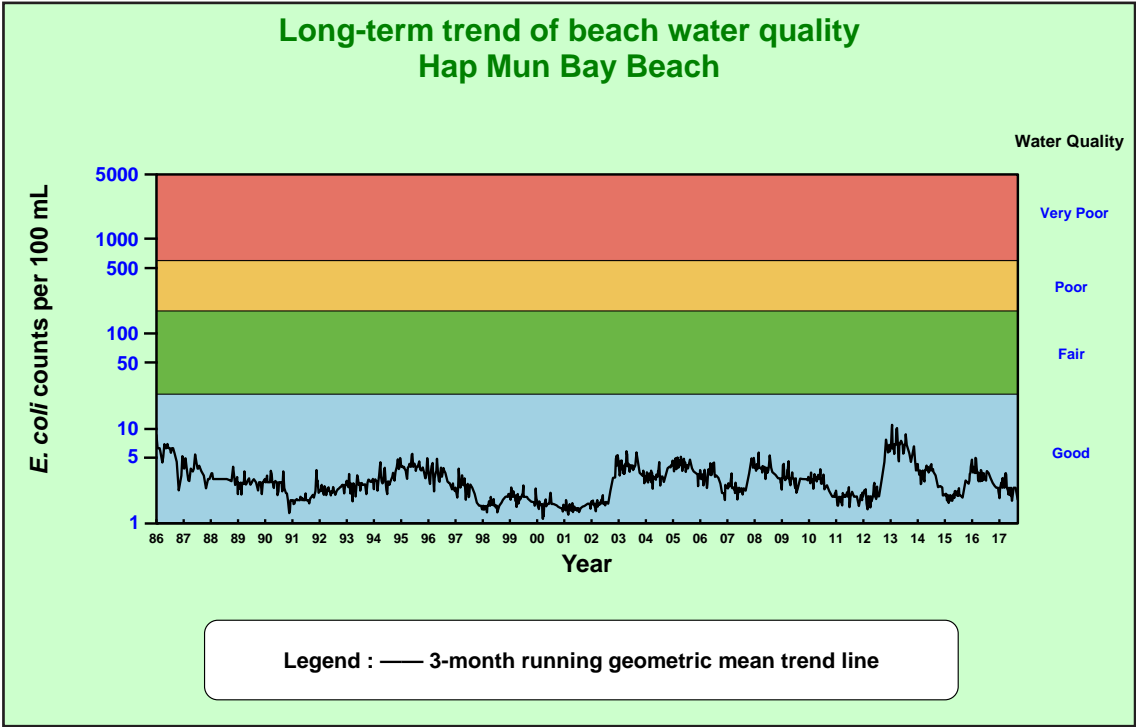




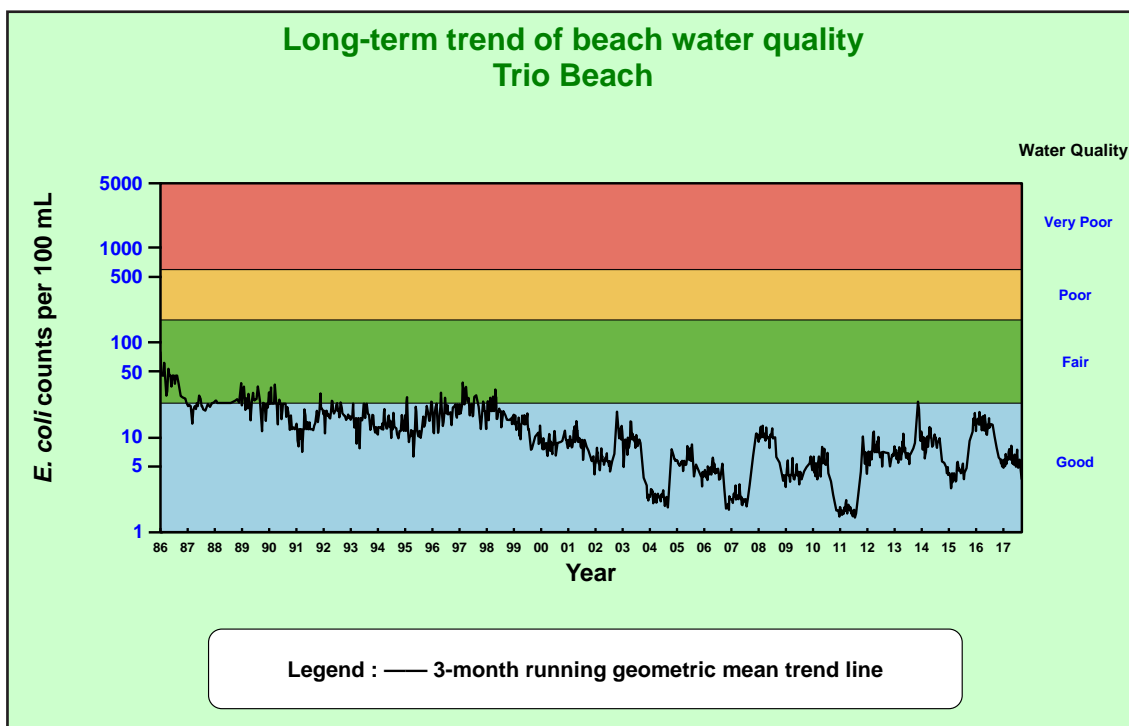
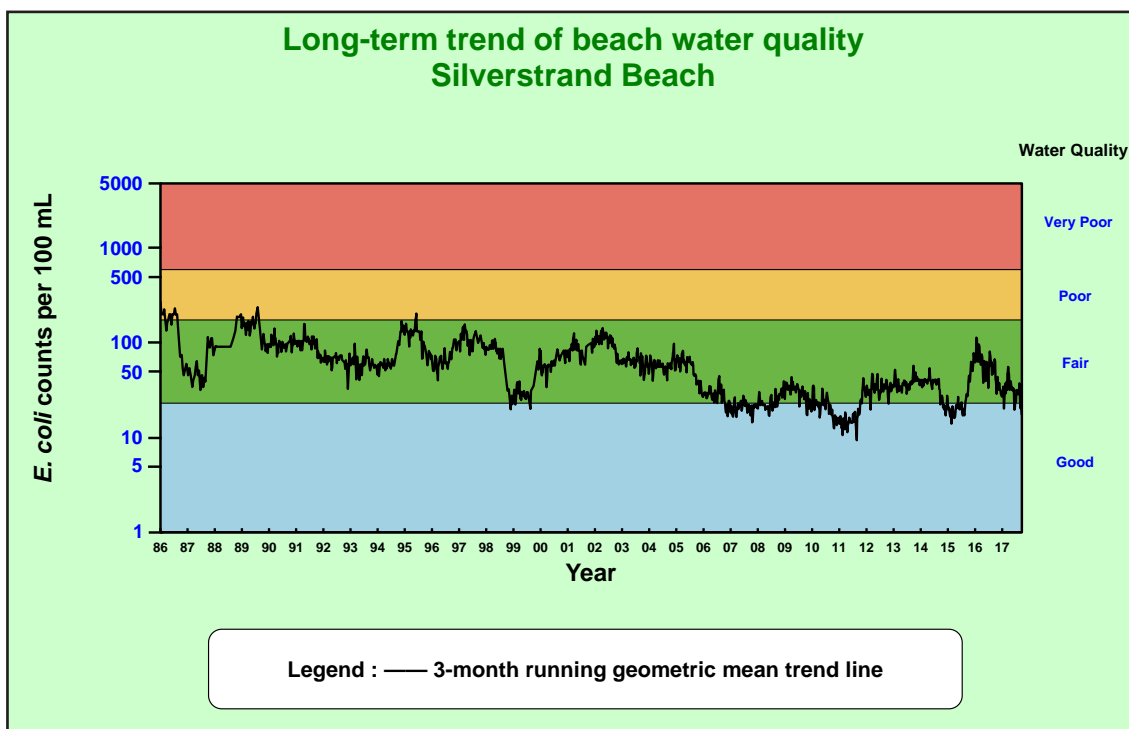


## Sai Kung District



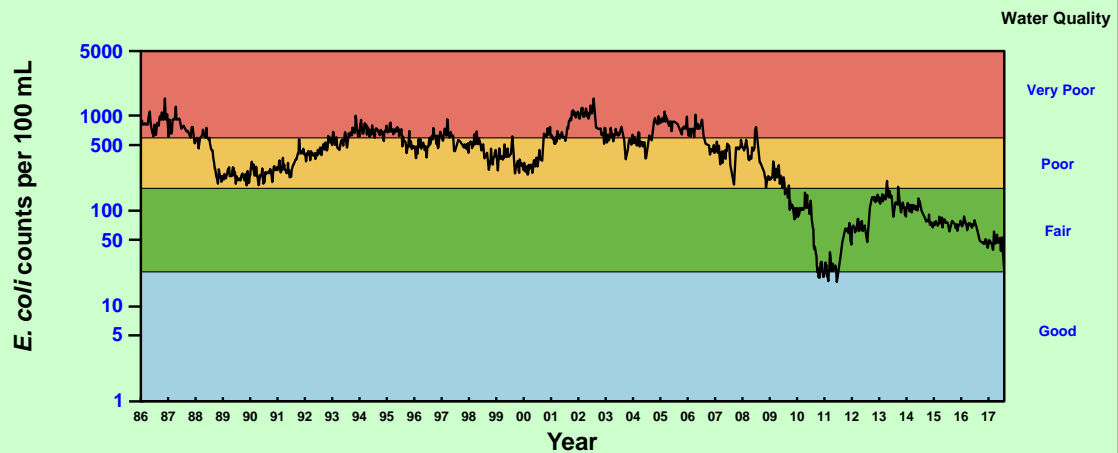






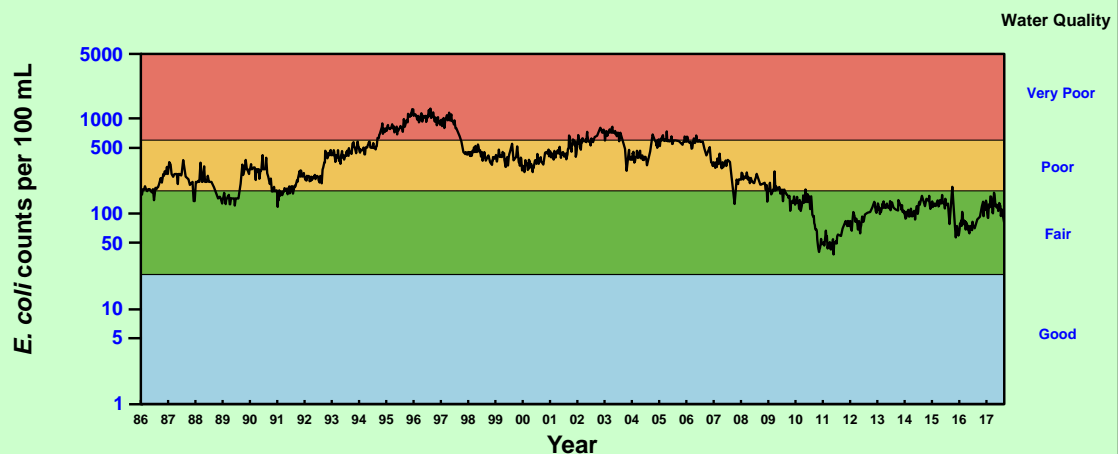
## Tsuen Wan District

### Long-term trend of beach water quality Anglers' Beach



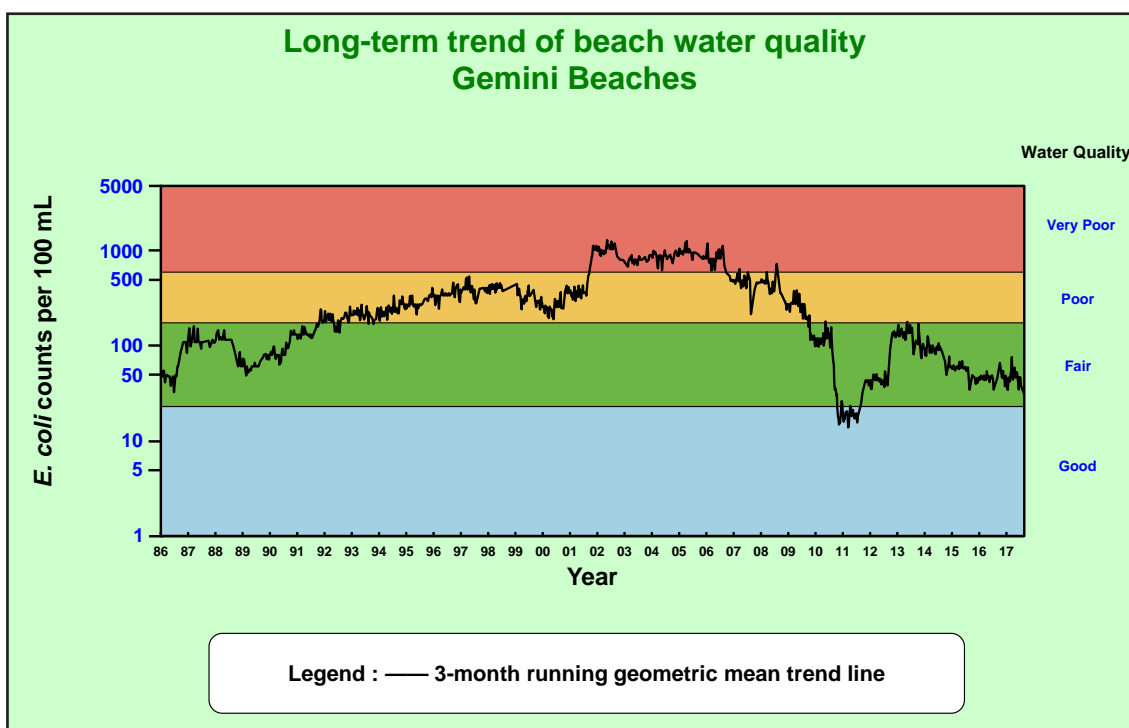
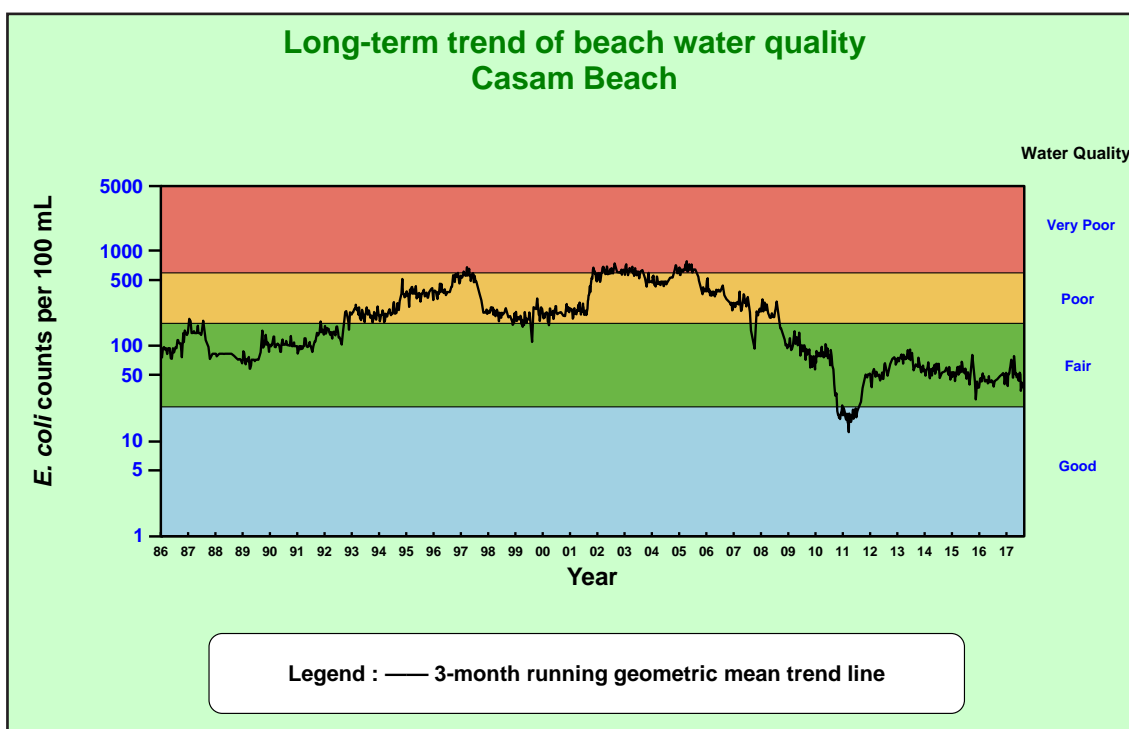
Legend : — 3-month running geometric mean trend line

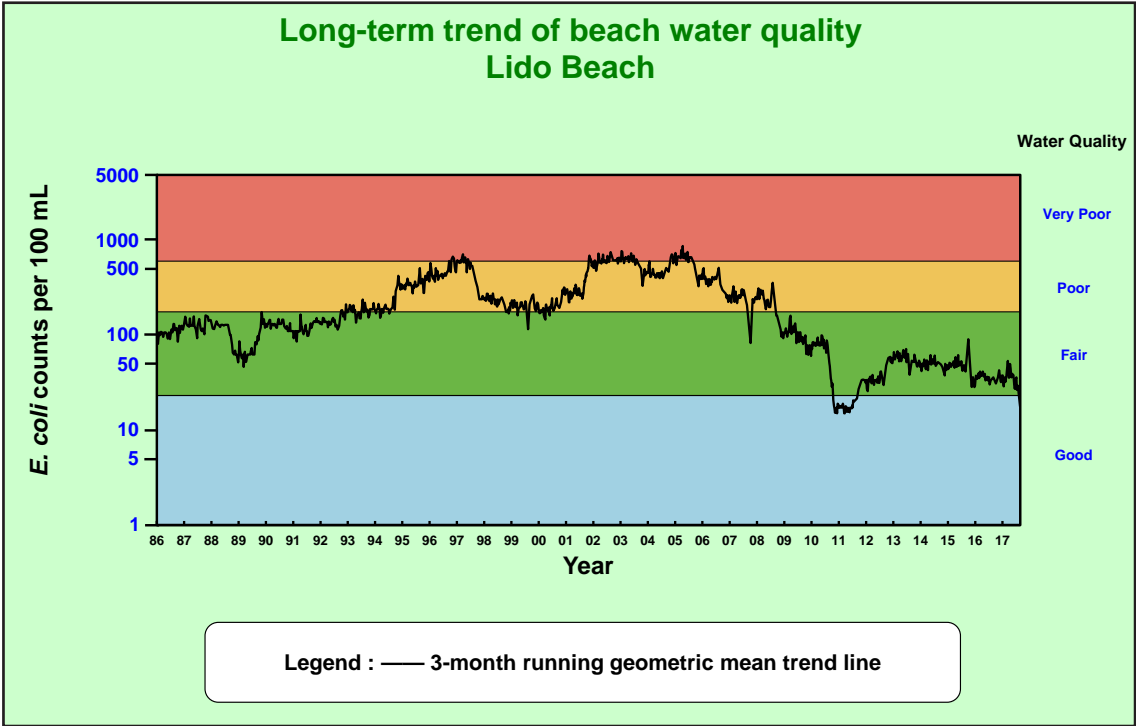
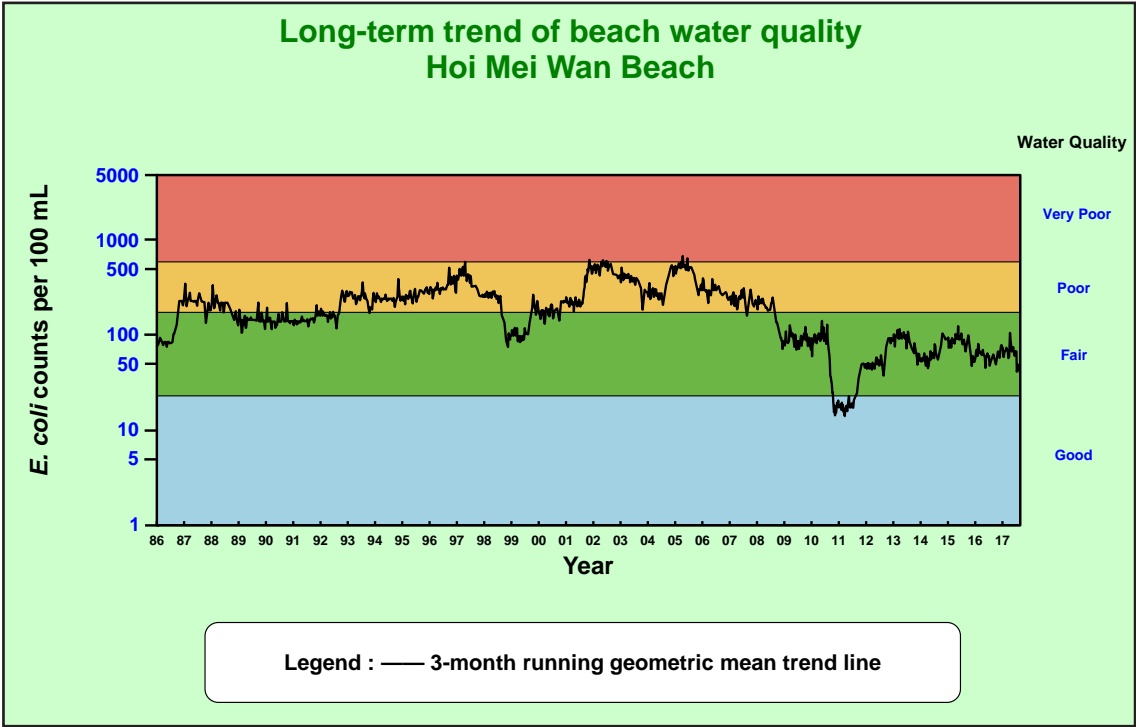
### Long-term trend of beach water quality Approach Beach

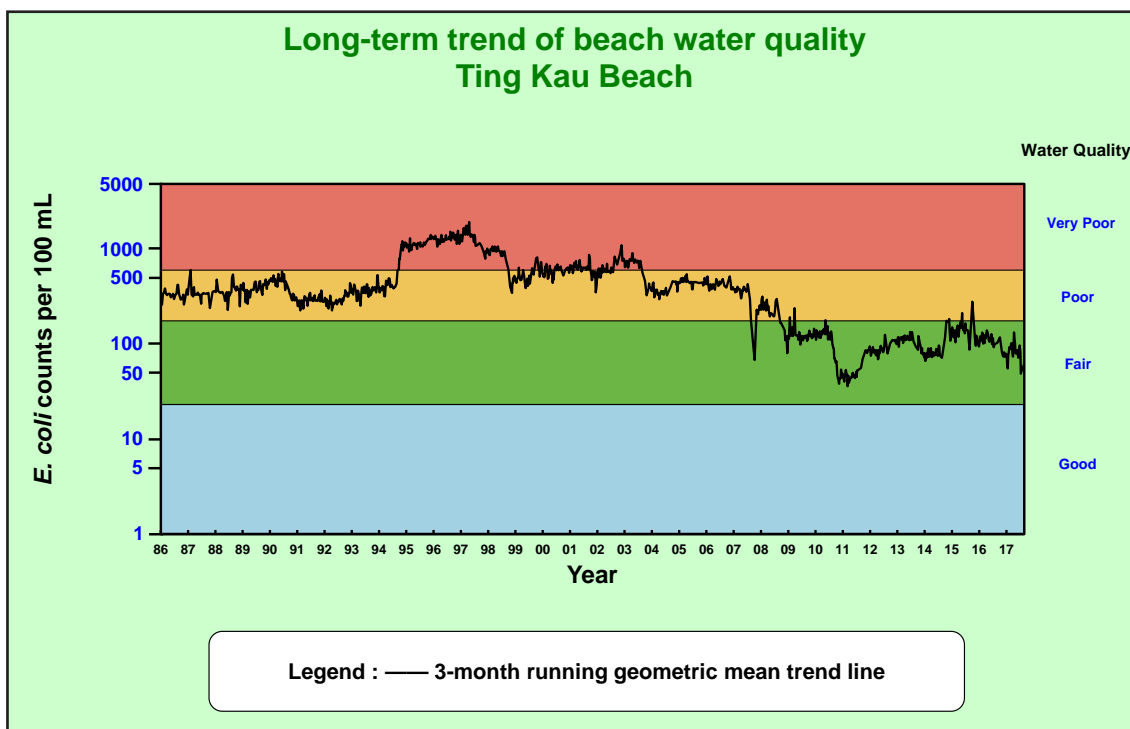
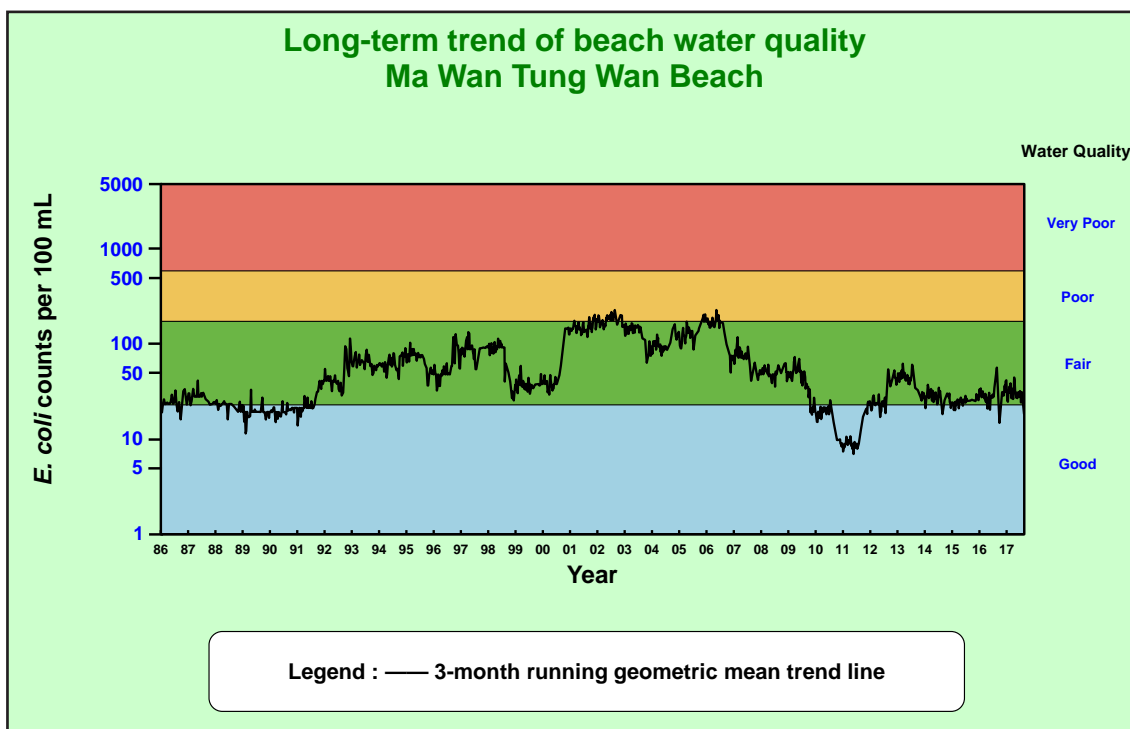


Legend : — 3-month running geometric mean trend line



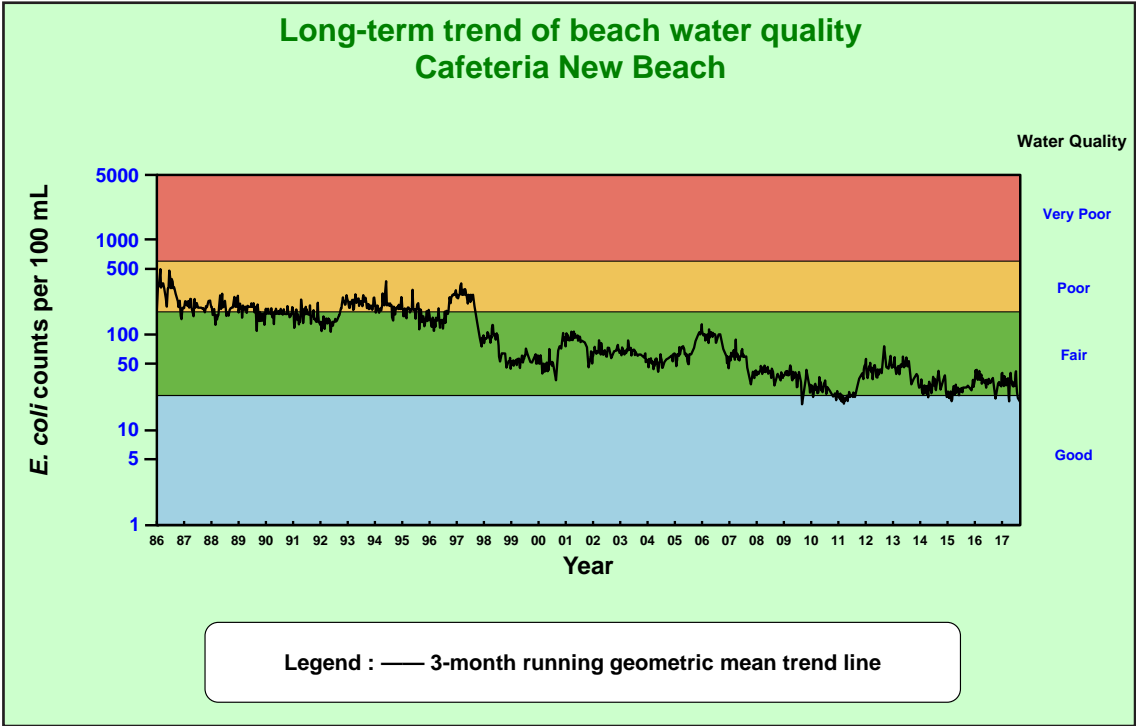
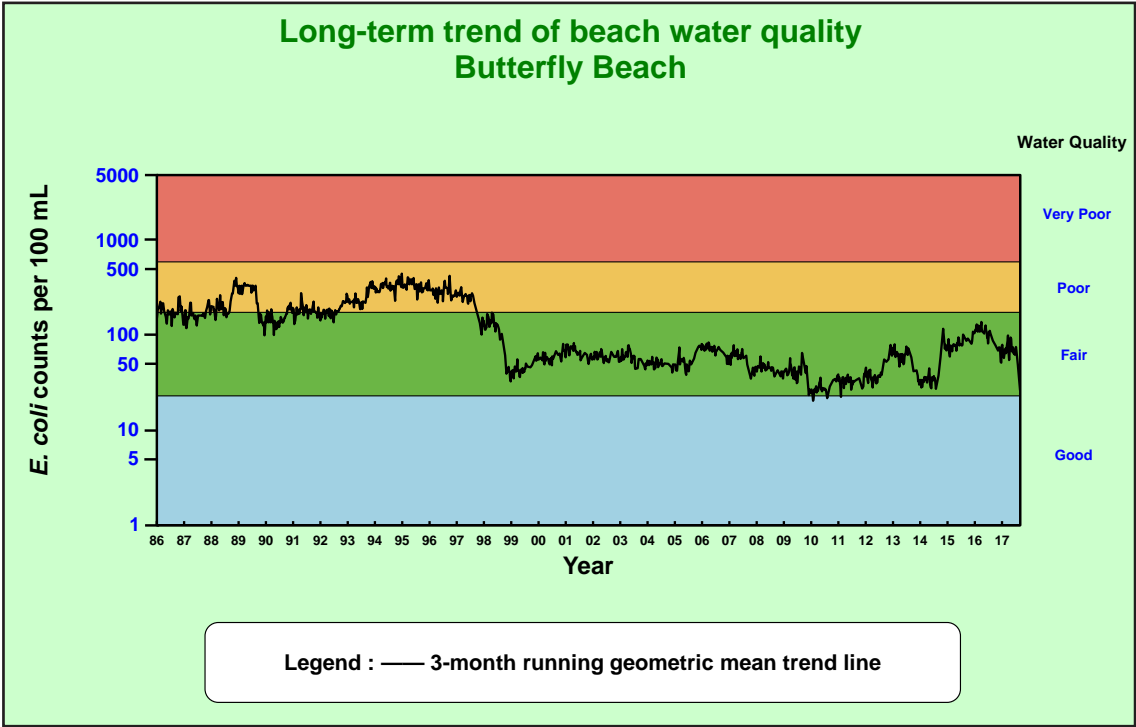


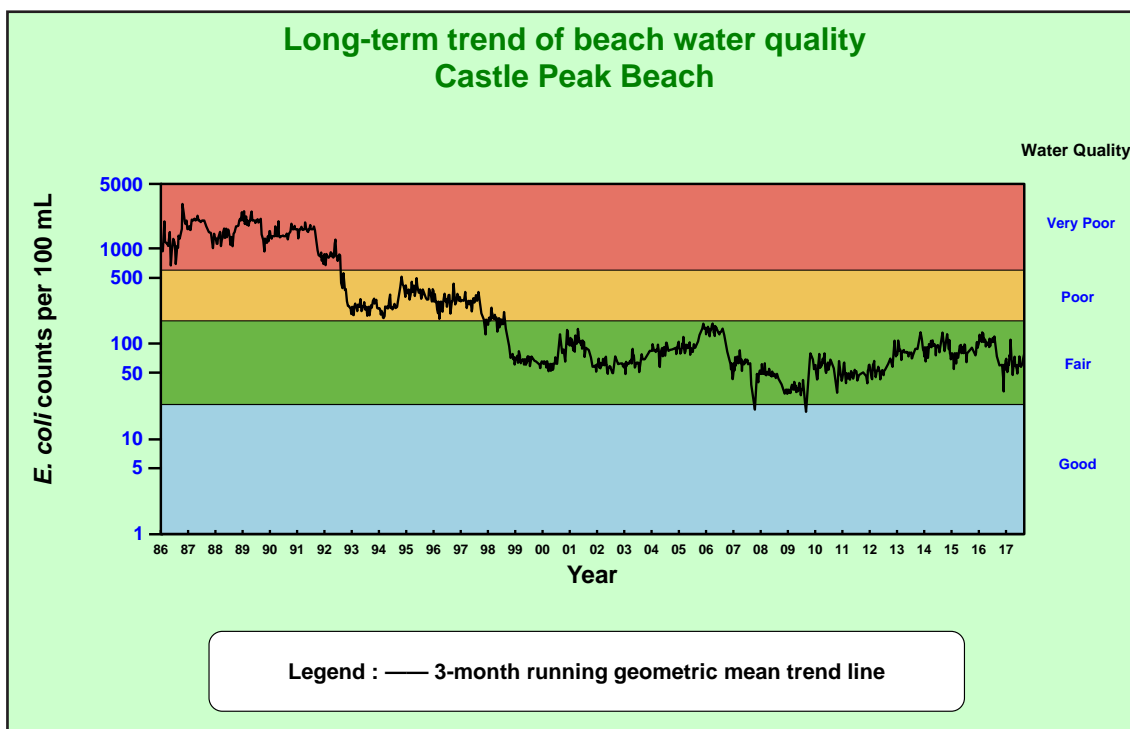
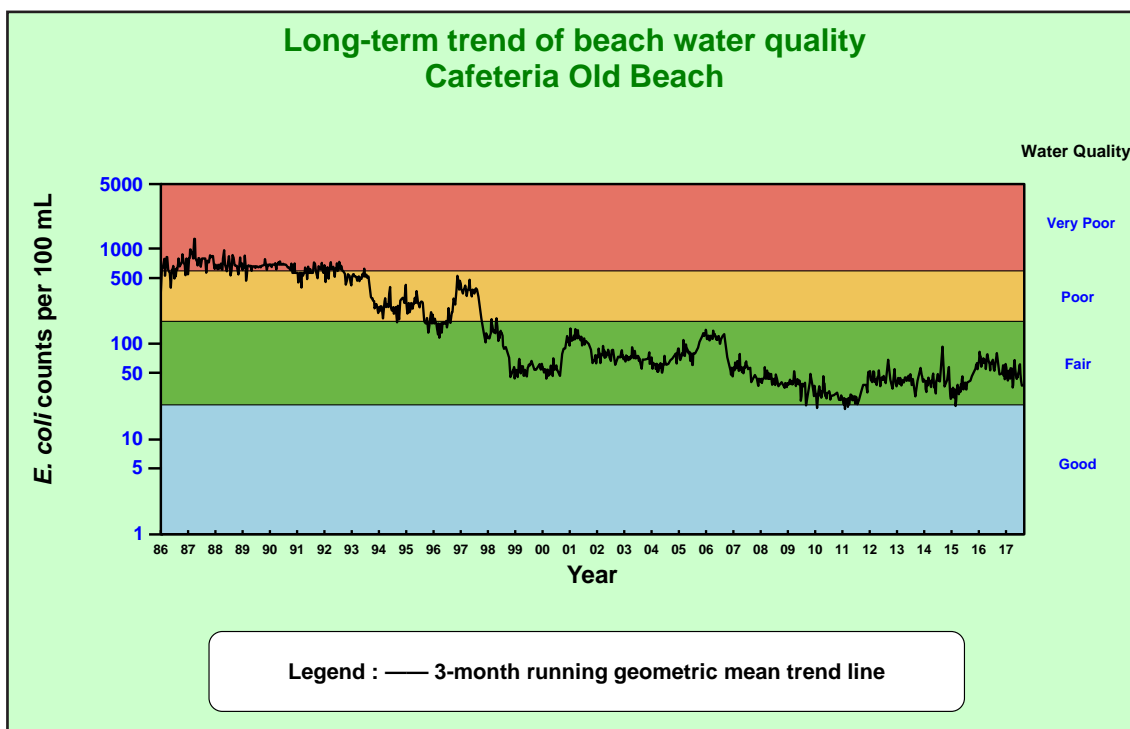


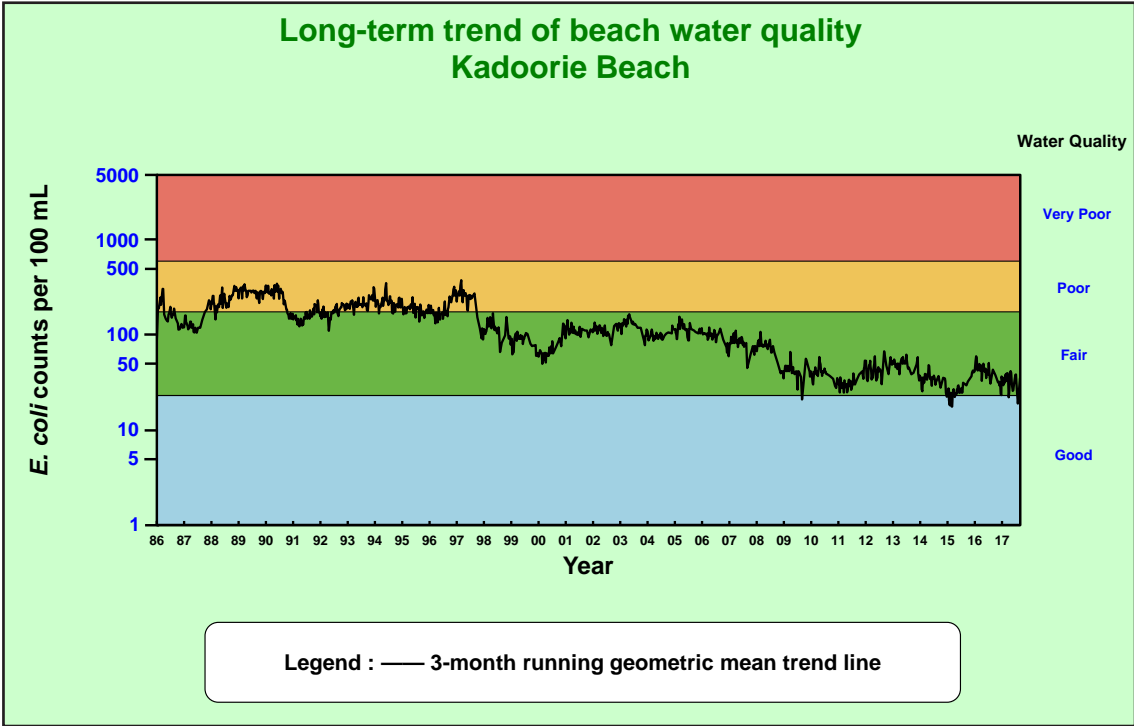
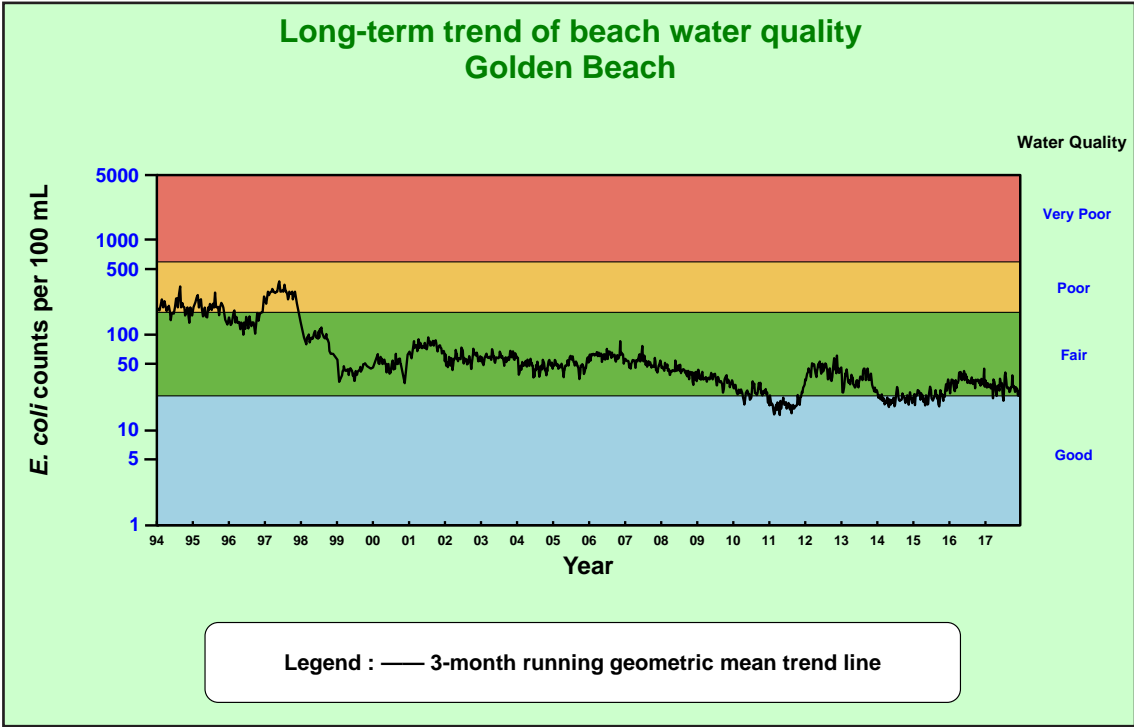




Tuen Mun District

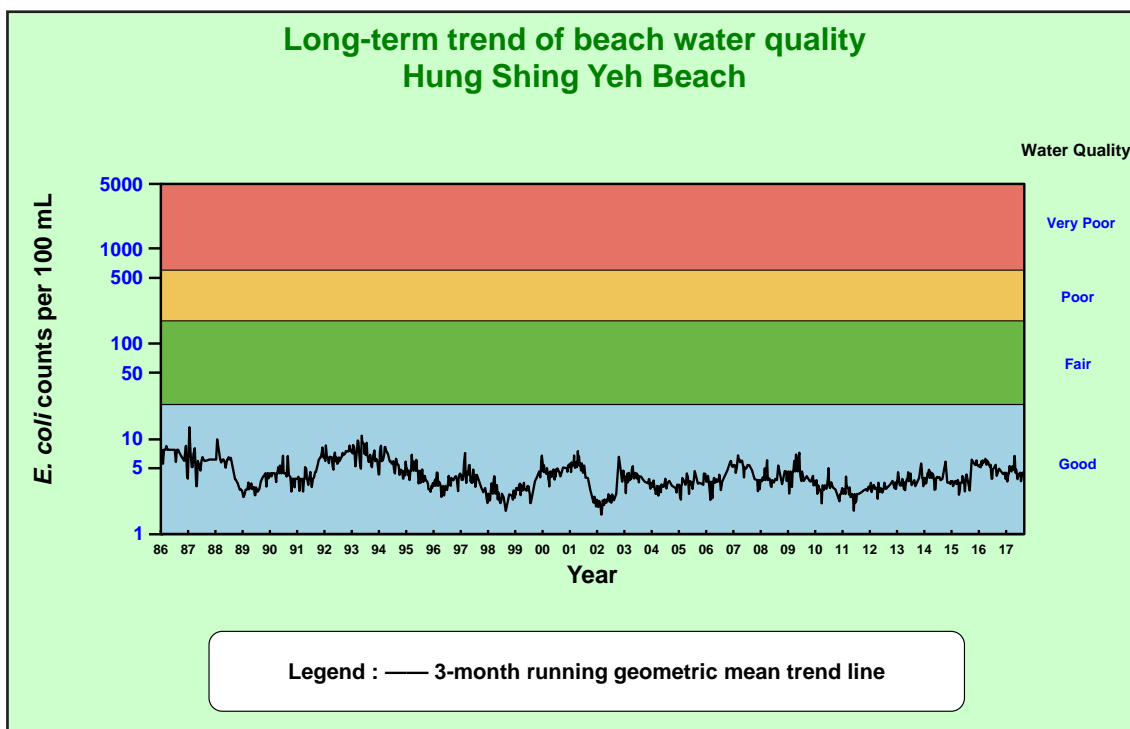
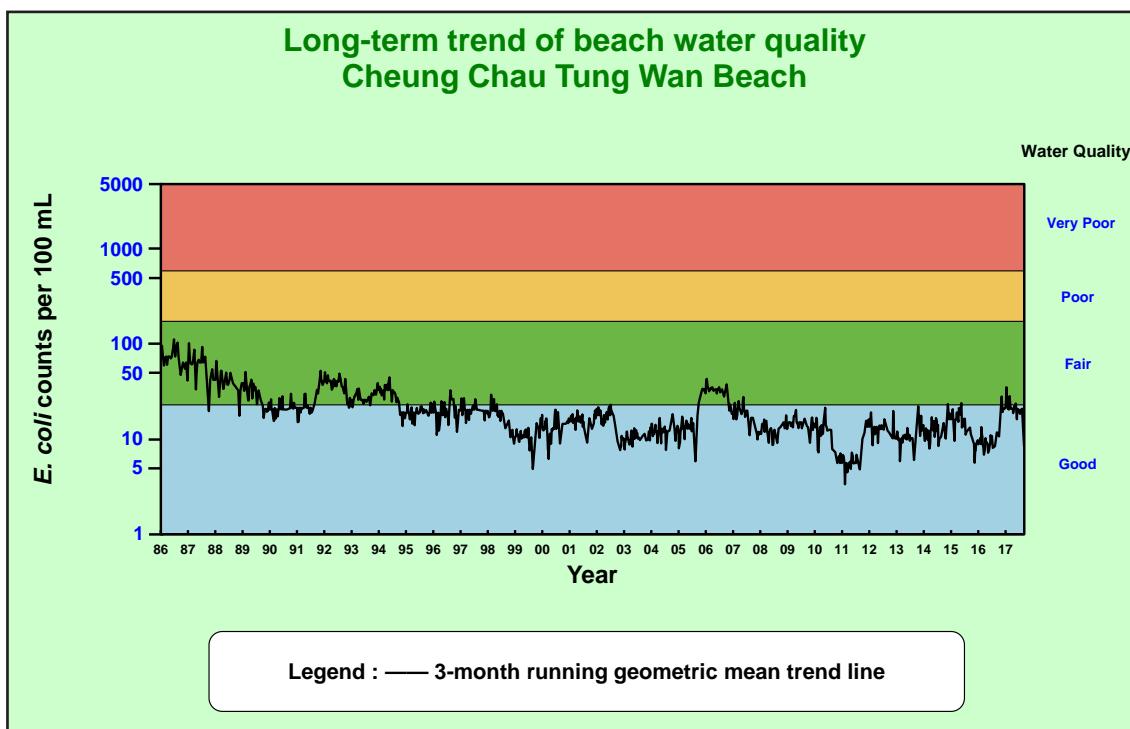


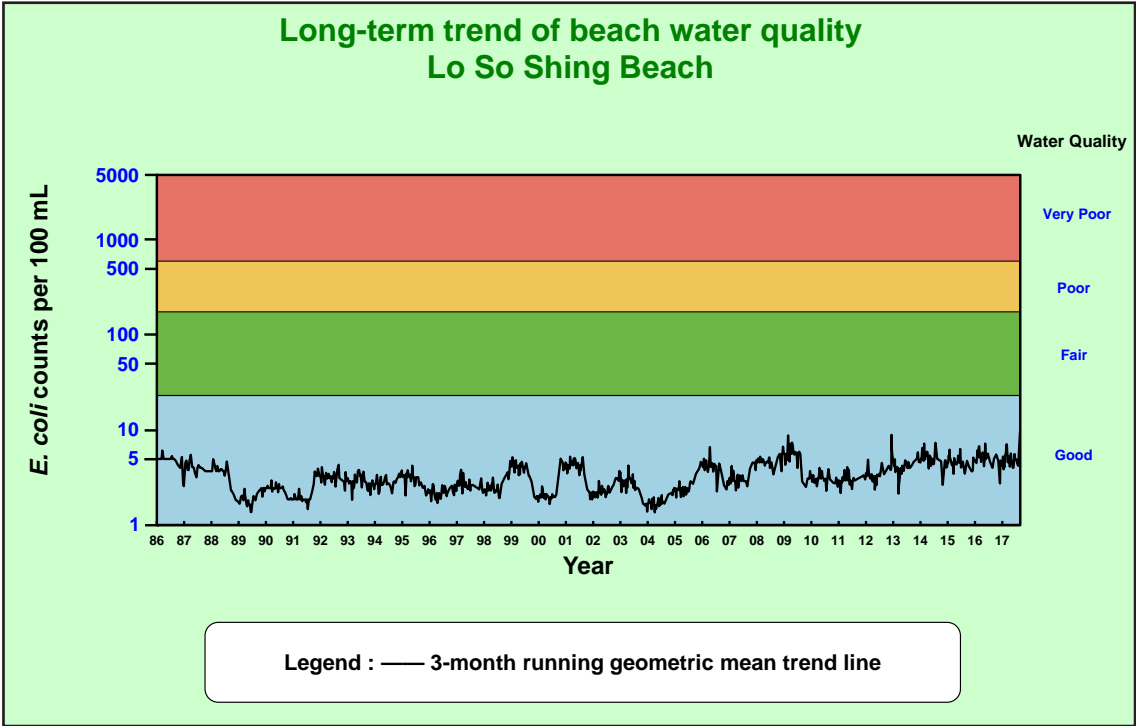
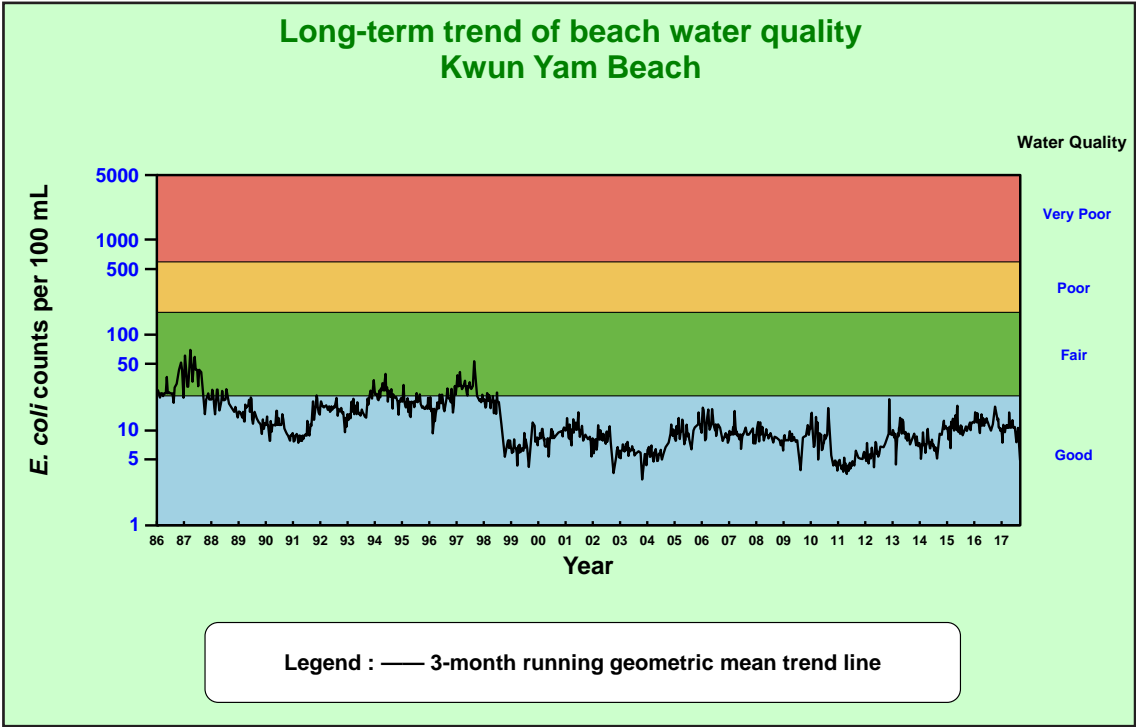


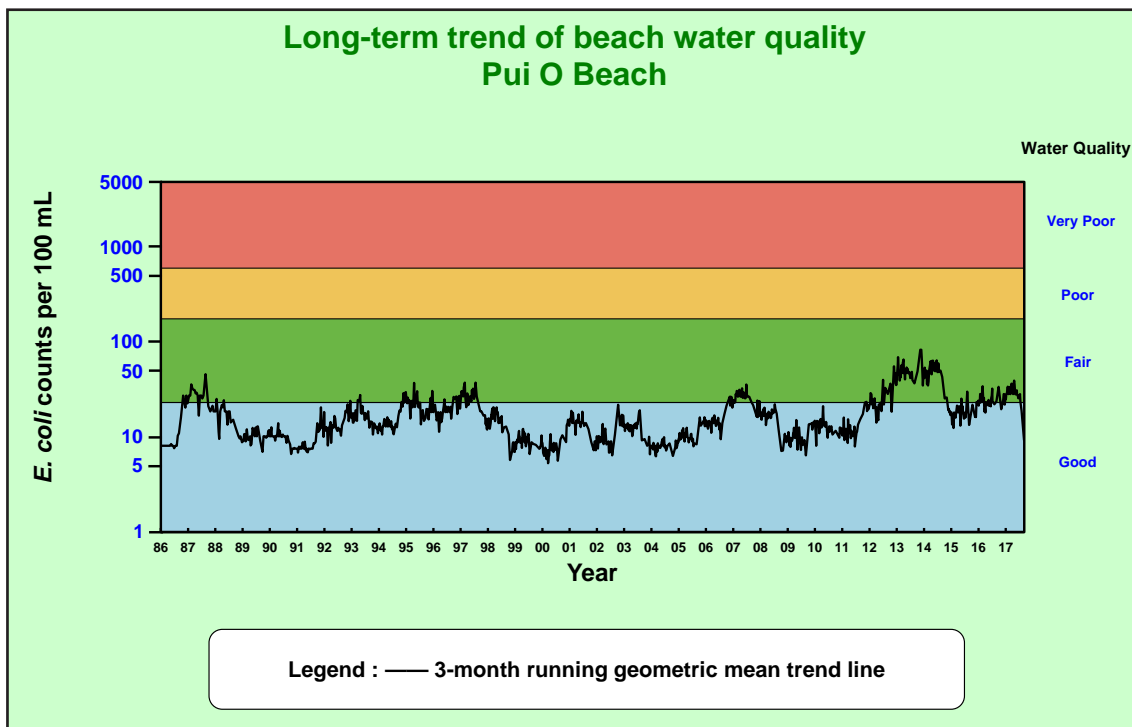
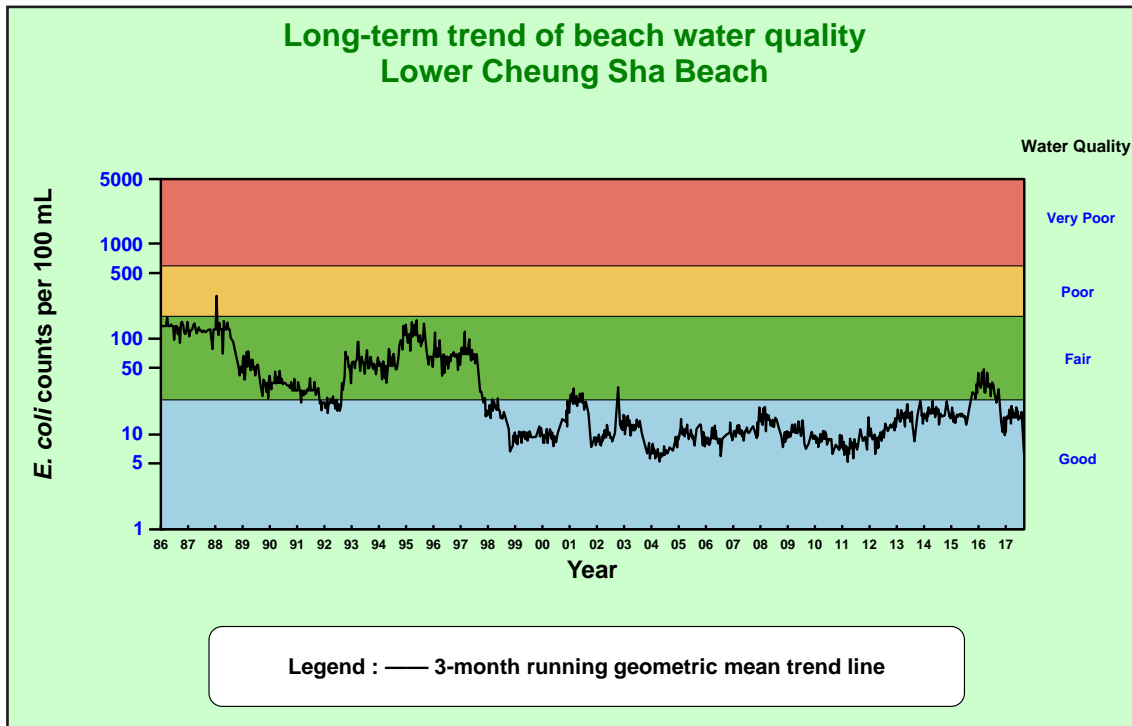




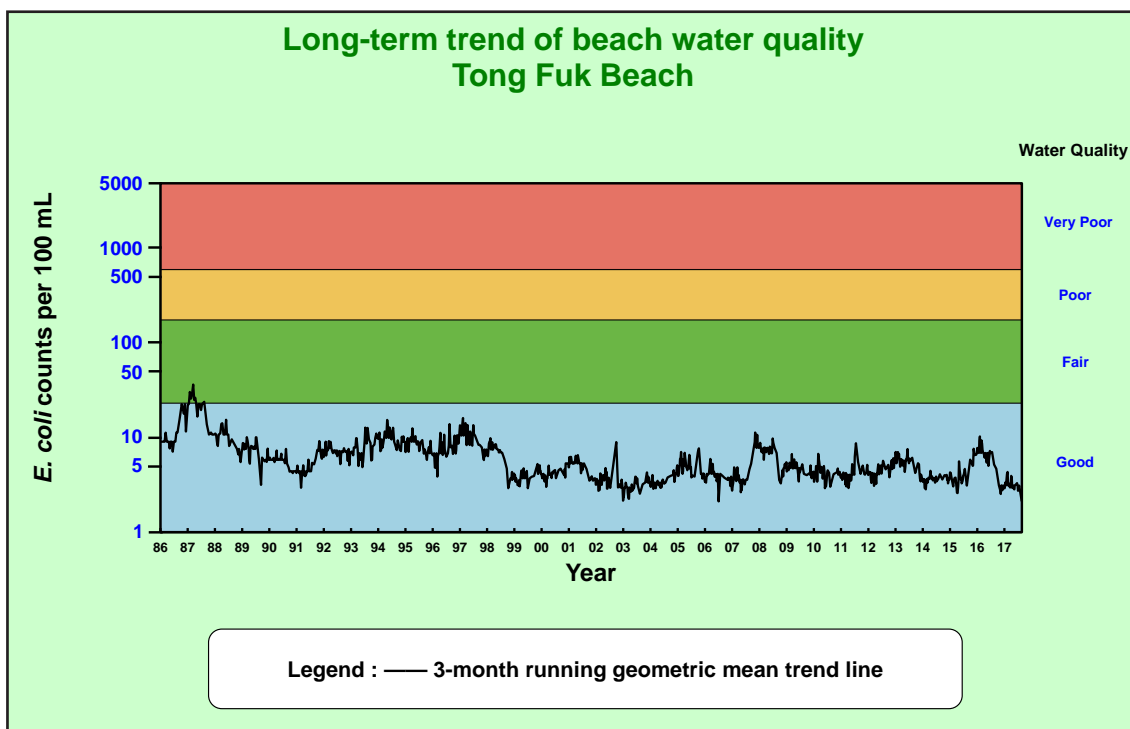
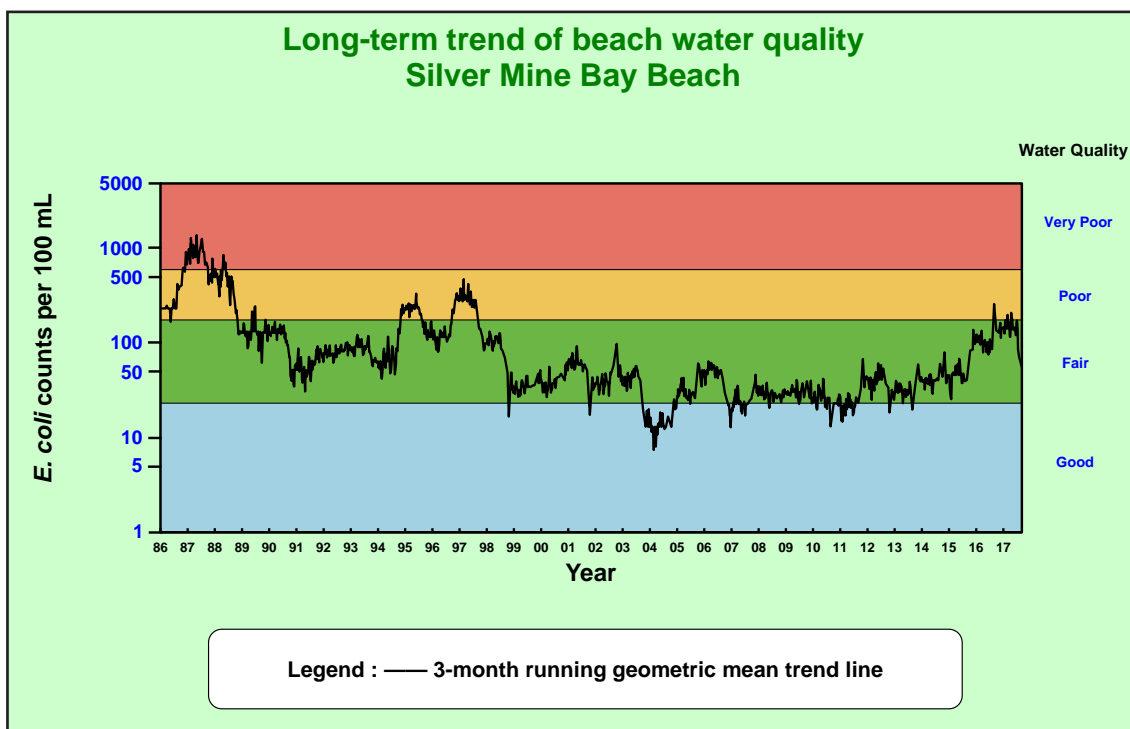
## Outlying Islands

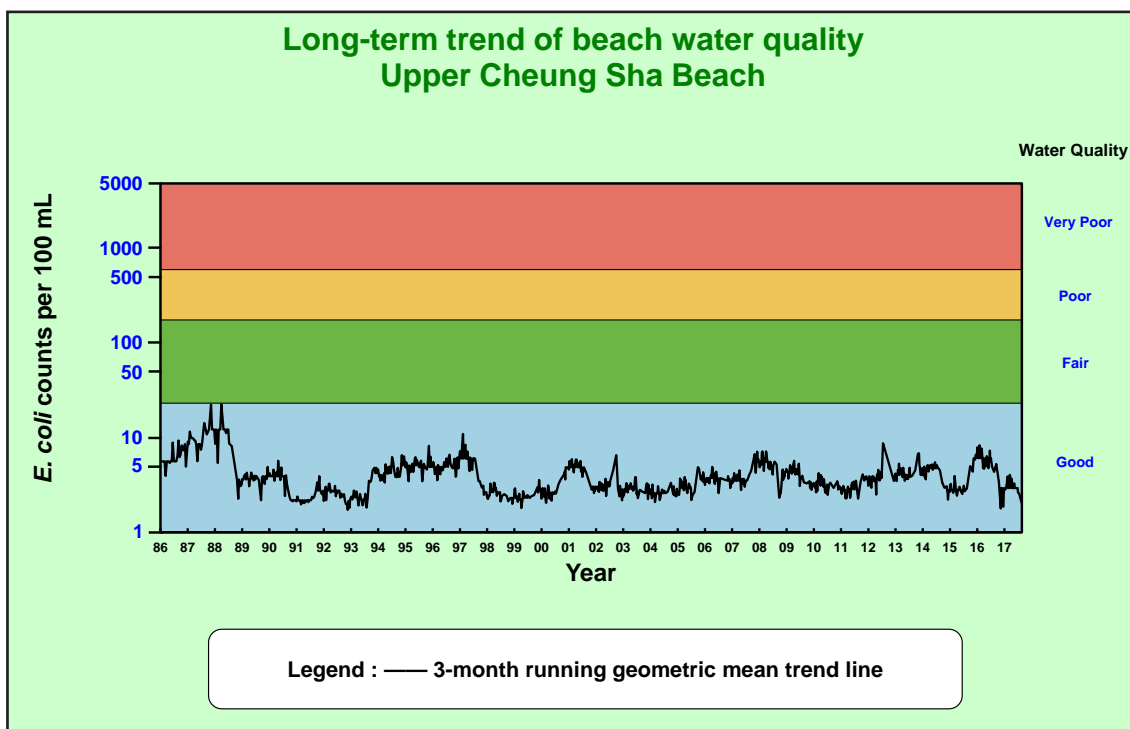














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