

NATIONAL RIVERS AUTHORITY
BIOLOGY
BATHING WATER QUALITY SURVEY 1993



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SUMMARY

The EC designated beaches at Shoebury East, Thorpe Bay and Westcliff achieved compliance with the EC Directive's coliform standards.

The five non-designated beaches rarely exceeded the EC I values for coliforms, and, if designated, would have complied with the EC Bathing Beach Directive for coliforms.

The number of samples containing viruses was lower than in previous years. The incidence of viruses ranged from 16% to 40% for the eight main Southend beaches. Actual virus concentrations ranged from 1/10 litres to 6/10 litres.

22% of samples analysed contained *Salmonella* sp. This is considerably higher than in recent years and is, to some degree, likely to be due to a change in external contractor.

The 1993 coliform failures do not appear to be linked to periods of high rainfall.

Coliform levels at the ancillary beaches, Gravesend and Grays, were higher than those at the Southend beaches, but were typical for these sites.

1. INTRODUCTION

The National Rivers Authority, Thames Region, is responsible for monitoring the three EC designated bathing beaches which fall within the region's boundaries. This document presents the results of the 1993 Bathing Water Quality Survey for these beaches, along with the results from five non-designated beaches.

The coliform results from two ancillary beaches sampled on five occasions during the bathing season are also included in this document.

2. BATHING BEACH SURVEY, 1993

a) Methodology

The method of sample collection followed that reported in the Bathing Water Quality Report, 1990 (Thomas, 1991). The sites, the frequency with which they were sampled and the microbiological analysis undertaken at each site is summarised in Table 1 with their location being shown in Figure 1.

Coliform and faecal streptococci analysis was carried out by the NRA Biology Laboratory at Waltham Cross. Coliform confirmation was carried out in accordance with the procedures set out in Reports on Public Health and Medical Subjects No. 71 (HMSO, 1984). *Salmonella* sp. was analysed by East Surrey Water PLC and viruses at the NRA Exeter Regional Laboratory.

b) Results and Discussion

The microbiological results from all ten beaches (three designated, five non-designated and two ancillary) are appended.

Designated beach compliance with the EC directive's microbiological standards is summarised in Table 2. Shoebury East, Thorpe Bay and Westcliff complied with the EC Coliform standards. Tables 3 to 5 compare the 1993 confirmed results with the presumptive results.

Table 6 presents the summary results for the non-designated and ancillary beaches. Originally, 20 samples for all microbiological parameters were planned from the non-designated sites, however, courier problems on 1/8/93 meant that only 19 virus samples were analysed. Poor weather at Canvey Island on 2/8/93 led to the cancelling of sampling at this site. As a result, only 19 microbiological samples were taken from Canvey Island. All five sites complied with the EC Coliform standards. Coliform levels at the two ancillary beaches were typical of recent years.

Table 7 summarises the coliform results since 1986 for the designated and non-designated beaches.

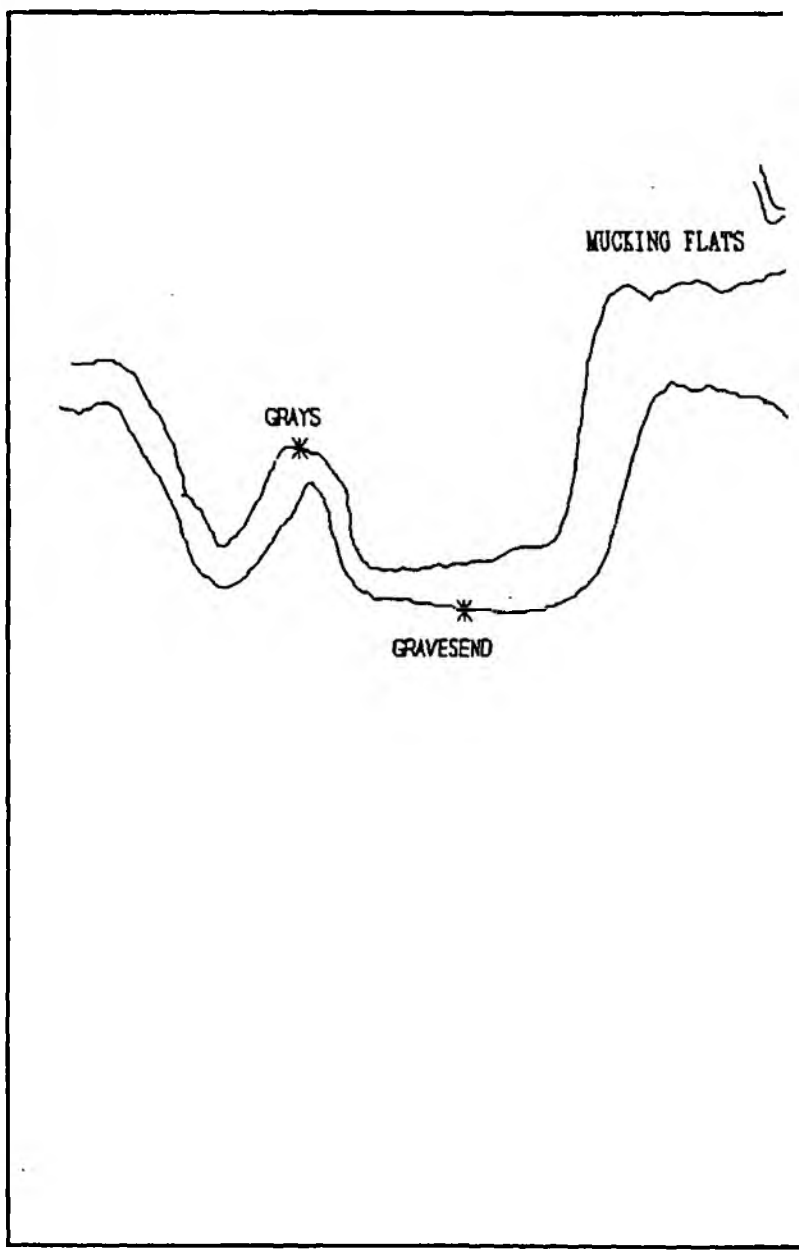
In recent years, high rainfall has been linked with coliform failures in the Southend area. Table 8 summarises rainfall during the 1993 bathing beach season and the associated coliform failures. This data does not suggest any significant link between high rainfall and coliform failure.

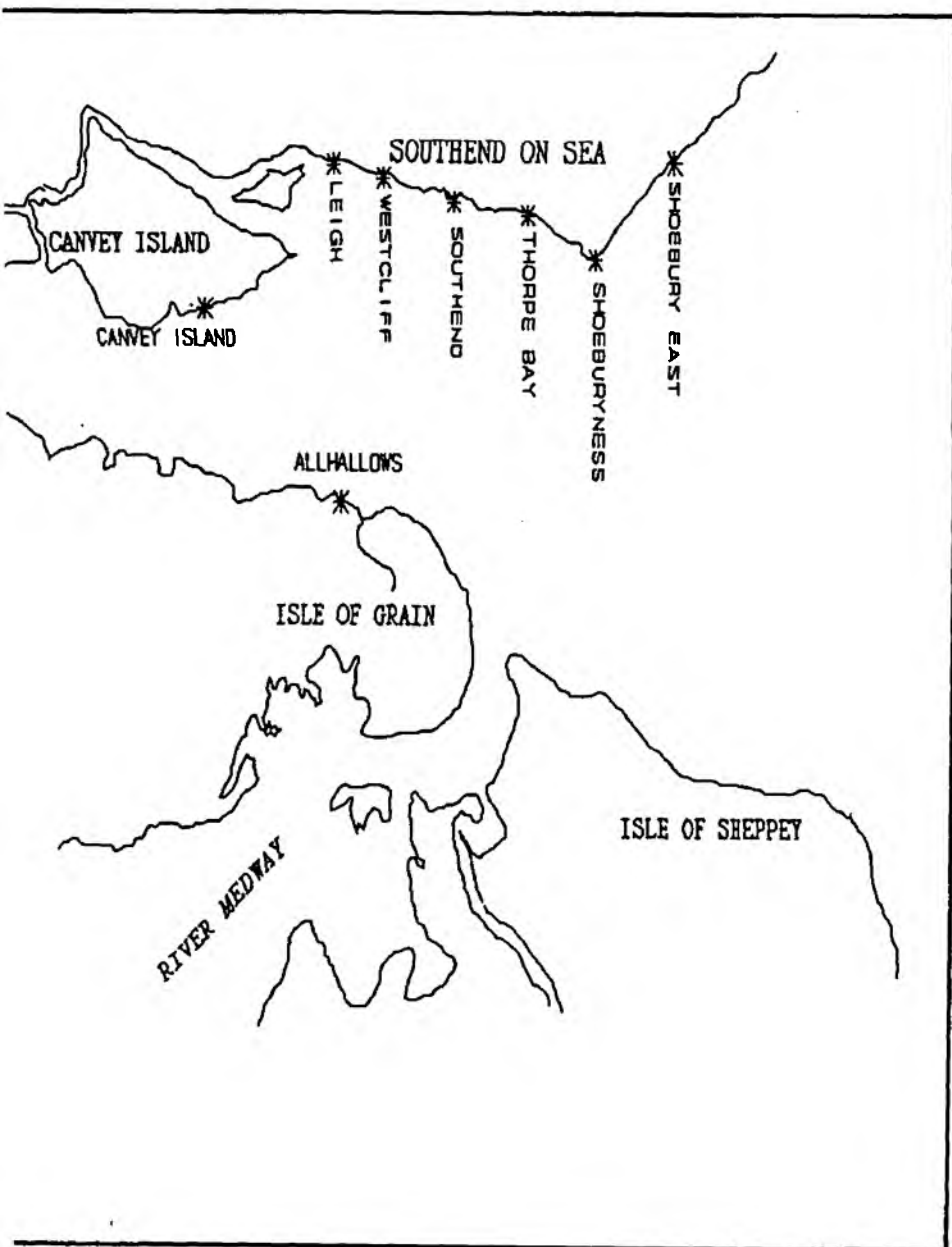
The number of samples containing viruses was lower than in previous years. The incidence ranged from 16% to 40% (53% to 68% in 1992) at the eight main

Southend beaches. Actual virus concentrations ranged from 1/10 litres to 6/10 litres.

Of the 160 samples analysed, 35 were found to contain *Salmonella* sp. This is considerably higher than in recent years (none in 1992) and is, to some degree, likely to be due to a change in external contractor.

FIGURE 1 - BATHING BEACH SITES 1993





SOUTHEND ON SEA

CANVEY ISLAND

CANVEY ISLAND

* LEIGH

* WESTCLIFF

* SOUTHEND

* THORPE BAY

* SHOEBURYNESS

* SHOEBURY EAST

ALLHALLOWS

ISLE OF GRAIN

ISLE OF SHEPPEY

RIVER MEDWAY

TABLE 1

SAMPLING FREQUENCY

<u>SITE</u>	<u>GRID REF.</u>	<u>E. COLI</u>	<u>TOTAL COLIFORMS</u>	<u>FAECAL STREPS.</u>	<u>SALMONELLA</u>	<u>VIRUSES</u>
<u>EC DESIGNATED BEACHES</u>						
Shoebury East	TQ 945 852	20	20	20	20	20
Thorpe Bay	TQ 911 847	20	20	20	20	19 ¹
Westcliff	TQ 864 853	20	20	20	20	20
<u>NON-DESIGNATED BEACHES</u>						
Shoeburyness	TQ 925 841	20	20	20	20	19 ¹
Southend	TQ 887 850	20	20	20	20	19 ¹
Leigh-on-Sea	TQ 841 856	20	20	20	20	19 ¹
Canvey Island	TQ 805 824	20	20	20	20	19 ¹
Allhallows	TQ 837 789	20	20	20	20	19 ¹
<u>ANCILLARY BEACHES</u>						
Grays	TQ 614 775	5	5	5	0	0
Gravesend East	TQ 649 746	4	4	4	0	0

¹ One result lost due to sampling/analytical error.

TABLE 2

COMPLIANCE WITH EC DIRECTIVE ON MICROBIOLOGICAL STANDARDSEC DESIGNATED BEACHESCompliance with Coliform I Values

	Shoebury East	Thorpe Bay	Westcliff
Number of Samples Taken	20	20	20
Number of Failures	0	1	0
% Compliance	100%	95%	100%
Compliance with EC Directive on Coliforms	PASS	PASS	PASS

Compliance with all Microbiological I Values

	Shoebury East	Thorpe Bay	Westcliff
Number of Samples Taken	20	20 ¹	20
Number of Failures	12	5	9
% Compliance	40%	75%	55%
Compliance with EC Directive on Coliforms, Salmonella and Enteroviruses	<u>FAIL</u>	<u>FAIL</u>	<u>FAIL</u>

¹ Only 19 virus samples

TABLE 3

SHOEBURY EAST

PRESUMPTIVE/CONFIRMED COLIFORM RESULTS

DATE	TOTAL COLIFORMS /100ml (Presumptive)	TOTAL COLIFORMS /100ml (Confirmed)	E. COLI /100ml (Presumptive)	E. COLI /100ml (Confirmed)
18/5/93	340	306	120	96
19/5/93	110	66	14	14
20/5/93	320	288	70	70
1/6/93	350	234	260	234
2/6/93	40	30	9	9
3/6/93	80	60	46	46
17/6/93	110	110	92	64
19/6/93	20	20	1	1
3/7/93	10	10	1	1
18/7/93	20	20	3	3
19/7/93	50	50	21	21
20/7/93	80	80	35	35
1/8/93	20	20	1	1
2/8/93	20	20	20	20
3/8/93	20	20	3	3
16/8/93	190	171	23	23
17/8/93	1,000	1,000	35	35
31/8/93	50	40	22	22
1/9/93	70	70	42	42
15/9/93	340	306	70	50

THORPE BAY

PRESUMPTIVE/CONFIRMED COLIFORMS RESULTS

DATE	TOTAL COLIFORMS /100ml (Presumptive)	TOTAL COLIFORMS /100ml (Confirmed)	E. COLI /100ml (Presumptive)	E. COLI /100ml (Confirmed)
18/5/93	1,800	1,260	78	70
19/5/93	1,400	1,120	450	450
20/5/93	700	700	200	200
1/6/93	2,100	2,300	2,300	2,300
2/6/93	330	231	74	74
3/6/93	150	105	68	68
17/6/93	470	376	150	90
19/6/93	670	670	80	80
3/7/93	70	70	25	25
18/7/93	100	90	40	40
19/7/93	500	500	220	220
20/7/93	1,300	1,300	80	72
1/8/93	400	300	220	220
2/8/93	270	270	100	100
3/8/93	110	110	80	80
16/8/93	120	108	54	54
17/8/93	160	160	59	59
31/8/93	130	104	50	50
1/9/93	50	50	12	12
15/9/93	400	400	130	130

WESTCLIFF

PRESUMPTIVE/CONFIRMED COLIFORMS RESULTS

DATE	TOTAL COLIFORMS /100ml (Presumptive)	TOTAL COLIFORMS /100ml (Confirmed)	E. COLI /100ml (Presumptive)	E. COLI /100ml (Confirmed)
18/5/93	700	630	270	270
19/5/93	430	387	140	102
20/5/93	2,100	1,470	370	370
1/6/93	400	370	370	370
2/6/93	90	60	15	12
3/6/93	300	210	160	144
17/6/93	530	530	300	300
19/6/93	770	770	67	67
3/7/93	60	60	39	39
18/7/93	1,500	1,500	1,500	1,500
19/7/93	700	700	190	190
20/7/93	900	900	320	320
1/8/93	70	70	6	6
2/8/93	200	390	390	390
3/8/93	700	700	560	560
16/8/93	70	60	26	23
17/8/93	1,700	1,700	930	930
31/8/93	540	540	370	370
1/9/93	400	360	210	210
15/9/93	900	800	260	260

TABLE 6

COMPARISON OF MICROBIOLOGICAL RESULTS FROM NON-DESIGNATED BEACHES WITH EC I VALUES

	SHOEBURYNESS	SOUTHEND	LEIGH ON-SEA	CANVEY ISLAND	ALLHALLOWS	GRAVESEND EAST	GRAYS
Number of Samples Taken	20 ¹	20 ¹	20 ¹	19 ²	20 ¹	4	5
Number of Samples Exceeding EC I Values for Coliforms	0	1	1	0	1	2	1
Percentage of Samples Within EC I Values for Coliforms	100%	95%	95%	100%	95%	50%	80%
Number of Samples Exceeding EC I Values for at least one Microbiological Standard. (Coliforms, Salmonella and Viruses)	7	7	7	9	7	-	-
Percentage of Samples Within EC I Values for all Microbiological Standards. (Coliforms, Salmonella and Viruses)	65%	65%	65%	47%	65%	-	-

¹ Only 19 virus samples

² Only 18 virus samples

TABLE 7

NUMBER OF SAMPLES EXCEEDING THE COLIFORM I VALUES AND THE PERCENTAGE COMPLIANCE (IN BOLD) WHERE APPROPRIATE

	1986		1987		1988		1989		1990		1991		1992		1993	
SHOEBURY EAST	-		-		-		0/20	100%	0/20	100%	0/20	100%	0/20	100%	0/20	100%
THORPE BAY	3/16	81%	5/16	69%	7/20	65%	1/20	95%	1/20	95%	0/20	100%	0/20	100%	1/20	95%
WESTCLIFF	1/16	94%	3/16	81%	2/20	90%	1/20	95%	0/20	100%	2/20	90%	0/20	100%	0/20	100%
SHOEBURYNESS (NON-DESIGNATED)	5/16		7/16		2/20		2/20		0/20		1/20		0/19		0/20	
SOUTHEND (NON-DESIGNATED)	3/16		9/16		4/20		1/20		1/20		1/20		0/20		1/20	
LEIGH-ON-SEA (NON-DESIGNATED)	1/16		1/16		2/20		1/20		0/20		0/20		1/20		1/20	
CANVEY ISLAND (NON-DESIGNATED)	-		-		1/9		2/20		0/20		0/20		0/19		0/20	
ALLHALLOWS (NON-DESIGNATED)	-		-		-		-		-		-		2/19		1/20	

TABLE 8

DAILY RAINFALL FIGURES FOR SOUTHEND, SOUTHCHURCH PARK (mm)

DAY No.	MAY	JUN	JUL	AUG	SEP
1	0.0	<u>0.8</u>	0.0	<u>0.0</u>	<u>0.0</u>
2	0.0	<u>0.0</u>	0.0	<u>0.0</u>	0.0
3	0.0	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	0.0
4	0.0	0.0	0.0	0.4	0.0
5	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0
7	0.0	0.0	0.0	trace	8.6
8	0.3	0.0	0.0	0.0	0.0
9	2.3	0.0	trace	trace	0.2
10	0.3	3.5	0.2	trace	1.0
11	0.0	2.3	0.0	9.3	2.6
12	0.0	8.6	0.0	0.0	8.4
13	0.0	3.8	5.5	0.0	13.2
14	trace	3.1	4.0	0.3	0.2
15	0.0	1.5	0.6	0.1	<u>0.8</u>
16	0.0	13.0	0.0	<u>0.0</u>	12.6
17	2.6	<u>0.0</u>	0.0	<u>0.0</u>	0.0
18	<u>3.5</u>	0.0	<u>1.4</u>	0.0	0.0
19	trace	<u>0.0</u>	<u>15.0</u>	0.0	0.0
20	<u>2.8</u>	0.0	<u>0.1</u>	0.0	0.4
21	trace	0.0	0.0	21.6	0.2
22	trace	0.0	0.0	0.2	3.8
23	0.0	0.0	0.3	0.0	0.2
24	0.0	0.0	4.2	0.0	0.0
25	0.0	trace	1.4	0.0	0.8
26	1.0	0.0	0.1	0.0	10.2
27	7.3	0.0	1.0	0.0	7.4
28	trace	0.0	trace	0.0	0.4
29	4.6	0.0	2.4	trace	2.0
30	0.3	0.0	1.7	0.0	4.0
31	0.0		0.0	<u>0.0</u>	
TOTAL	25.0	36.6	37.9	31.9	77.0

Shaded block indicates sample date.

Underlined figure indicates designated beach coliform failure

Bold figure indicates non-designated beach coliform failure.

APPENDIX

N.R.A. BATHING BEACH RESULTS - 1993

SHOEBURY EAST

TQ 945 852
(EC Designated Beach)

DATE	TOTAL COLIFORMS /100ml (Confirmed)	E. COLI /100ml (Confirmed)	FAECAL STREPS. /100ml (Presumptive)	SALMONELLA /1	VIRUSES /101
18/5/93	306	96	20	ND	ND
19/5/93	66	14	10	ND	ND
20/5/93	288	70	120	ND	ND
1/6/93	234	234	1,000	PRESENT	ND
2/6/93	30	9	10	PRESENT	ND
3/6/93	60	46	10	PRESENT	ND
17/6/93	110	64	<10	PRESENT	1
19/6/93	20	1	<10	PRESENT	2
3/7/93	10	1	10	PRESENT	ND
18/7/93	20	3	<10	ND	ND
19/7/93 ¹	50	21	40	ND	1
20/7/93	80	35	40	ND	2
1/8/93	20	1	<10	ND	1
2/8/93	20	20	<100	ND	2
3/8/93	20	3	<100	ND	3
16/8/93 ¹	171	23	<10	ND	ND
17/8/93	1,000	35	20	ND	1
31/8/93	40	22	110	ND	ND
1/9/93	70	42	140	ND	ND
15/9/93	306	50	100	ND	ND

ND=Not Detected

Notes:

1 Salmonella and Virus results to be used to assess compliance with EC Bathing Beach Directive.

N.R.A. BATHING BEACH RESULTS - 1993

SHOEBURYNES

TQ 925 841

DATE	TOTAL COLIFORMS /100ml (Presumptive)	E. COLI /100ml (Presumptive)	FAECAL STREPS. /100ml (Presumptive)	SALMONELLA /1	VIRUSES /101
18/5/93	800	200	<100	ND	ND
19/5/93	300	60	<100	ND	ND
20/5/93	900	160	<100	ND	ND
1/6/93	1,100	40	100	ND	1
2/6/93	<100	10	<100	ND	ND
3/6/93	200	20	NA	PRESENT	ND
17/6/93	300	140	100	PRESENT	2
19/6/93	500	60	<100	PRESENT	ND
3/7/93	<100	<10	<100	ND	ND
18/7/93	<100	10	100	PRESENT	ND
19/7/93	100	50	<100	ND	1
20/7/93	600	60	<100	ND	ND
1/8/93	200	30	<100	ND	‡
2/8/93	<100	30	100	ND	ND
3/8/93	130	130	<100	ND	ND
16/8/93	400	60	<100	ND	ND
17/8/93	<100	20	<100	ND	ND
31/8/93	<100	50	100	ND	ND
1/9/93	180	180	<100	ND	ND
15/9/93	200	70	<100	ND	2

ND=Not Detected

‡ Sample not analysed due to courier delay.

N.R.A. BATHING BEACH RESULTS - 1993

THORPE BAY

TQ 911 847
(EC Designated Beach)

DATE	TOTAL COLIFORMS /100ml (Confirmed)	E. COLI /100ml (Confirmed)	FAECAL STREPS. /100ml (Presumptive)	SALMONELLA /1	VIRUSES /101
18/5/93	1,260	70	20	PRESENT	ND
19/5/93	1,120	450	100	ND	1
20/5/93	700	200	190	ND	LOST
1/6/93	2,300	2,300	780	PRESENT	ND
2/6/93	231	74	60	ND	ND
3/6/93	105	68	40	ND	ND
17/6/93	376	90	110	PRESENT	2
19/6/93	670	80	20	ND	ND
3/7/93	70	25	20	ND	ND
18/7/93	90	40	260	ND	ND
19/7/93 ¹	500	220	180	ND	ND
20/7/93	1,300	72	300	ND	ND
1/8/93	300	220	80	ND	ND
2/8/93	270	100	170	ND	ND
3/8/93	110	80	20	ND	ND
16/8/93 ¹	108	54	10	ND	ND
17/8/93	160	59	60	ND	ND
31/8/93	104	50	30	ND	ND
1/9/93	50	12	60	ND	ND
15/9/93	400	130	170	ND	1

ND=Not Detected

Notes:

¹ Salmonella and Virus results to be used to assess compliance with EC Bathing Beach Directive.

N.R.A. BATHING BEACH RESULTS - 1993

SOUTHEND

TQ 887 850

DATE	TOTAL COLIFORMS /100ml (Presumptive)	E. COLI /100ml (Presumptive)	Faecal STREPS. /100ml (Presumptive)	SALMONELLA /1	VIRUSES /101
18/5/93	1,200	110	<100	ND	ND
19/5/93	2,800	290	100	ND	ND
20/5/93	1,000	2,800	1,900	ND	ND
1/6/93	1,200	110	300	ND	ND
2/6/93	1,200	80	100	ND	1
3/6/93	2,600	680	NA	PRESENT	ND
17/6/93	5,500	1,800	300	PRESENT	6
19/6/93	1,800	180	200	PRESENT	ND
3/7/93	400	70	100	ND	ND
18/7/93	1,100	250	<100	ND	ND
19/7/93	2,700	1,400	500	ND	ND
20/7/93	1,900	300	300	PRESENT	2
1/8/93	<100	10	<100	ND	‡
2/8/93	1,500	760	500	ND	ND
3/8/93	2,000	1,300	1,000	ND	ND
16/8/93	200	50	100	ND	ND
17/8/93	1,700	1,700	2,000	ND	ND
31/8/93	<100	80	<100	ND	ND
1/9/93	800	20	<100	ND	ND
15/9/93	500	110	300	ND	2

ND=Not Detected

‡ Sample not analysed due to courier delay.

N.R.A. BATHING BEACH RESULTS - 1993

WESTCLIFF

TQ 864 853
(EC Designated Beach)

DATE	TOTAL COLIFORMS /100ml (Confirmed)	E. COLI /100ml (Confirmed)	Faecal STREPS. /100ml (Presumptive)	SALMONELLA /1	VIRUSES /101
18/5/93	630	270	40	ND	1
19/5/93	387	102	90	ND	ND
20/5/93	1,470	370	100	ND	1
1/6/93	370	370	30	ND	ND
2/6/93	60	12	10	ND	ND
3/6/93	210	144	30	PRESENT	ND
17/6/93	530	300	10	ND	ND
19/6/93	770	67	80	PRESENT	ND
3/7/93	60	39	10	PRESENT	ND
18/7/93	1,500	1,500	290	ND	ND
19/7/93 ¹	700	190	50	ND	1
20/7/93	900	320	120	ND	ND
1/8/93	70	6	90	ND	1
2/8/93	390	390	2,000	ND	ND
3/8/93	700	560	330	ND	1
16/8/93 ¹	60	23	10	ND	ND
17/8/93	1,700	930	310	ND	ND
31/8/93	540	370	50	ND	ND
1/9/93	360	210	50	ND	ND
15/9/93	800	260	360	ND	1

ND=Not Detected

Notes:

1 Salmonella and Virus results to be used to assess compliance with EC Bathing Beach Directive.

N.R.A. BATHING BEACH RESULTS - 1993

LEIGH-ON-SEA

TQ 841 856

DATE	TOTAL COLIFORMS /100ml (Presumptive)	E. COLI /100ml (Presumptive)	FAECAL STREPS. /100ml (Presumptive)	SALMONELLA /1	VIRUSES /101
18/5/93	100	10	<100	ND	ND
19/5/93	900	60	<100	ND	ND
20/5/93	600	270	400	PRESENT	ND
1/6/93	300	80	<100	ND	1
2/6/93	<100	<10	200	PRESENT	1
3/6/93	300	100	NA	ND	ND
17/6/93	700	160	<100	PRESENT	1
19/6/93	400	20	<100	ND	ND
3/7/93	500	170	100	ND	ND
18/7/93	<100	10	<100	ND	ND
19/7/93	900	360	3,400	ND	ND
20/7/93	1,000	220	<100	PRESENT	ND
1/8/93	200	20	<100	ND	‡
2/8/93	100	40	<100	ND	ND
3/8/93	100	10	<100	ND	ND
16/8/93	<100	10	<100	ND	ND
17/8/93	4,600	3,000	700	ND	ND
31/8/93	<100	10	<100	ND	1
1/9/93	100	50	<100	ND	ND
15/9/93	1,100	410	100	ND	1

ND=Not Detected

‡ Sample not analysed due to courier delay.

N.R.A. BATHING BEACH RESULTS - 1993

CANVEY ISLAND

TQ 805 824

DATE	TOTAL COLIFORMS /100ml (Presumptive)	E. COLI /100ml (Presumptive)	FAECAL STREPS. /100ml (Presumptive)	SALMONELLA /1	VIRUSES /101
18/5/93	400	150	100	ND	ND
19/5/93	6,200	1,000	<100	ND	2
20/5/93	2,600	460	300	ND	2
1/6/93	500	260	<100	PRESENT	ND
2/6/93	1,700	480	100	PRESENT	3
3/6/93	1,100	290	NA	ND	ND
17/6/93	400	190	<100	ND	1
19/6/93	700	130	<100	PRESENT	ND
3/7/93	900	230	<100	PRESENT	ND
18/7/93	800	320	100	ND	1
19/7/93	1,400	340	<100	ND	ND
20/7/93	1,300	440	<100	ND	ND
1/8/93	800	230	<100	ND	-‡
2/8/93†	-	-	-	-	-
3/8/93	2,000	470	100	ND	ND
16/8/93	800	230	100	ND	ND
17/8/93	600	130	<100	ND	ND
31/8/93	280	280	<100	ND	ND
1/9/93	200	200	<100	ND	ND
15/9/93	1,200	200	<100	PRESENT	ND

ND=Not Detected

† Not sampled - Sea State >4

‡ Sample not analysed due to courier delay.

N.R.A. BATHING BEACH RESULTS - 1993

ALLHALLOWS

TQ 837 789

DATE	TOTAL COLIFORMS /100ml (Presumptive)	E. COLI /100ml (Presumptive)	FAECAL STREPS. /100ml (Presumptive)	SALMONELLA /l	VIRUSES /10l
18/5/93	200	20	<100	ND	ND
19/5/93	100	10	<100	ND	ND
20/5/93	1,600	530	100	ND	ND
1/6/93	500	120	<100	ND	ND
2/6/93	400	120	100	PRESENT	ND
3/6/93	150	150	NA	PRESENT	ND
17/6/93	200	160	<100	PRESENT	ND
19/6/93	3,500	3,500	100	PRESENT	1
3/7/93	400	150	100	PRESENT	2
18/7/93	200	200	<100	ND	ND
19/7/93	900	610	1,700	ND	1
20/7/93	800	360	500	ND	ND
1/8/93	<100	10	<100	ND	‡
2/8/93	300	170	<100	ND	ND
3/8/93	200	<10	200	ND	ND
16/8/93	100	40	<100	ND	ND
17/8/93	300	90	200	PRESENT	ND
31/8/93	100	40	<100	ND	ND
1/9/93	<100	<10	<100	ND	ND
15/9/93	700	230	100	ND	ND

ND=Not Detected

‡ Sample not analysed due to courier delay.

N.R.A. BATHING BEACH RESULTS - 1993

GRAYS

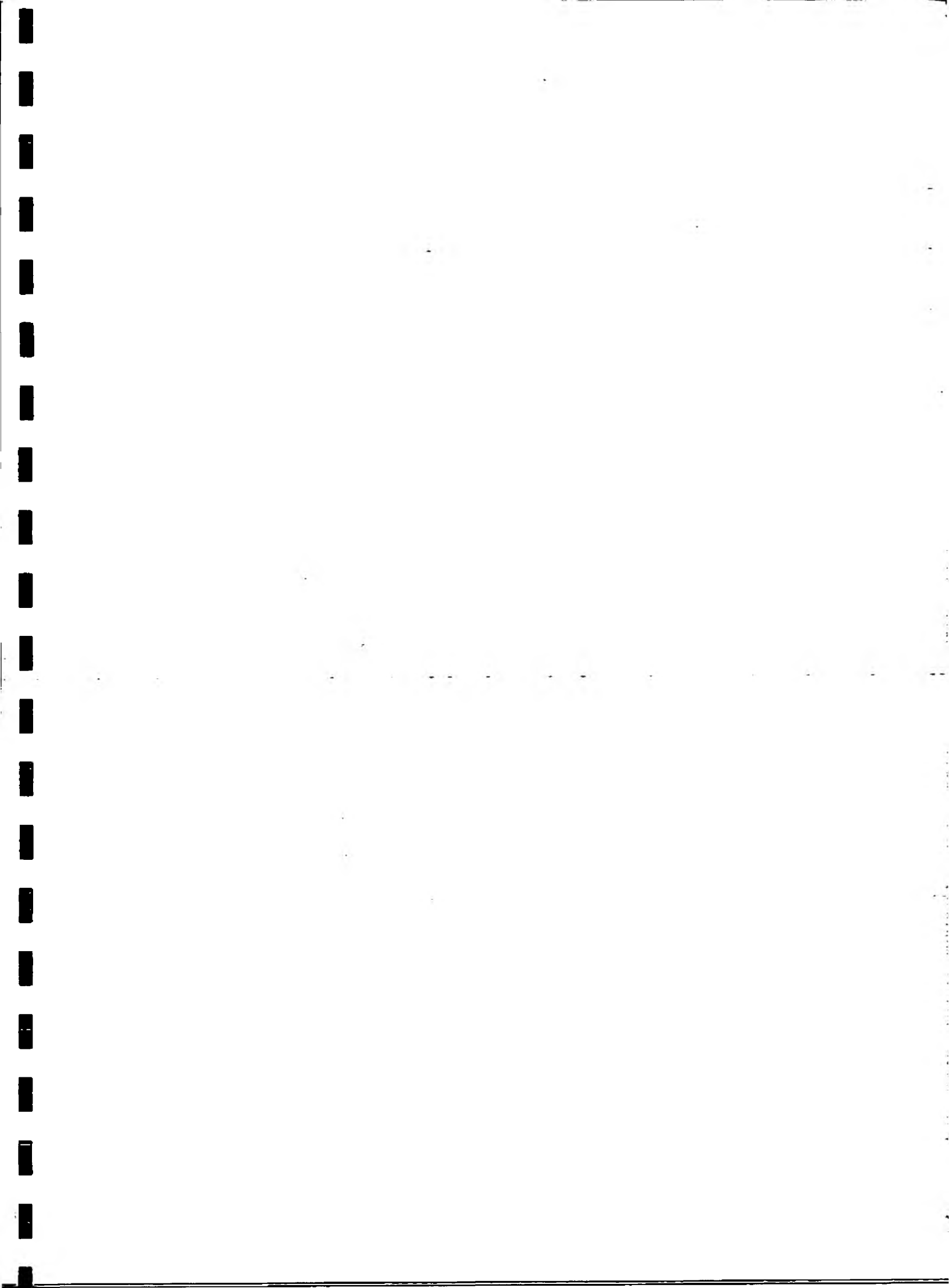
TQ 614 775

DATE	TOTAL COLIFORMS /100ml (Presumptive)	E. COLI /100ml (Presumptive)
18/5/93	8,600	790
17/6/93	7,800	3,000
19/7/93	4,000	600
17/8/93	3,300	540
15/9/93	7,000	1,700

GRAVESEND EAST

TQ 649 746

DATE	TOTAL COLIFORMS /100ml (Presumptive)	E. COLI /100ml (Presumptive)
18/5/93	5,000	1,300
17/6/93	8,500	2,600
19/7/93	5,000	>1,000
17/8/93	Not Taken	Not Taken
15/9/93	27,000	2,000



1.1.1

1.1.2

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