

DEVON AREA INTERNAL REPORT

**AN INVESTIGATION TO FIND THE REASON
WHY HOLCOMBE BEACH FAILED TO COMPLY
WITH THE E.C. BATHING WATERS
DIRECTIVE.**

JANUARY 1996

DEV/E/07/96

**Author: N HICKS
INVESTIGATIONS TECHNICIAN**

**G R Bateman
Area Manager (Devon)**



*National Rivers Authority
South Western Region*

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AN INVESTIGATION TO FIND THE REASON WHY HOLCOMBE BEACH FAILED TO COMPLY WITH E.G. BATHING WATERS DIRECTIVE.

1. INTRODUCTION

The Holcombe stream is a small watercourse that rises just to the North of Teignmouth. The stream flows East for approximately 1.5 K passing through the small village of Holcombe and then on to the sea. There is an historical problem with water quality on the Holcombe stream. An investigation was carried out in 1993 by Mr C Martin, Devon Area Investigation Officer. He compiled a report highlighting the various potential problems. (*appendix I.*) The main cause for concern was the South West Water sewerage pumping station located at Smugglers Lane Holcombe.

2. TERMS OF REFERENCE

2.1 OBJECTIVES

The investigations team were asked in May 1995 to find the reasons why the beach at Holcombe failed to comply with the E.C. Bathing Waters Directive in 1994. (*appendix II.*)

2.2 PROJECT TEAM

T.Cronin (Project leader)
N. Hicks (Project Manager)

3 METHODS

1. Carry out site visits and take photographs (*appendix III.*)
2. Implement a sampling run, in which four identified sites were sampled, (*appendix IV.*) This work to be carried out by the routine sampling staff.

4 RESULTS

1. The results of the sampling undertaken are shown. (*appendix V.*)
2. The rainfall data from the weather station located at Luscombe Castle are shown. (*appendix VI.*)



5 DISCUSSION

After the initial site visits the pumping station was again identified as the most probable cause of contamination of the beach, this is due partly to bad design, and poor wet weather containment at the station. An extra sample run was implemented to confirm this. During 1995 S.W.W. applied for planning permission to extend and modify the screening and sump containment facility at the pumping station. This work was started in late 1995 and completed by January 1996. Work has also been completed to a private property in Smugglers Lane which used to discharge sewerage to a storm overflow pipe. This effluent is now contained on site and then pumped directly to the pumping station. All work was carried out by Teignbridge council who are S.W.W. contracted agents.

6 CONCLUSION

The extra sample run results show that after rain the standard of water quality in Holcombe stream drops. However the results do not prove conclusively that the contamination originates from the pumping station

7 RECOMMENDATIONS

The E.C. bathing beach sampling program for 1996 is due to start in May and finish in September, between these dates the beach at Holcombe will be sampled on a weekly basis. At the end of the 1996 program the data will be appraised, Any failures will be identified by the Regional Water Quality team, and investigations would be requested for the 1969/97 work program.

APPENDIX I

TECHNICAL NOTE

Tidal Waters Investigation Unit

Subject: Bacterial Inputs To Teignmouth (Holcombe) Beach

Date: 15.12.93

Author: C.Martin

Tech. Note No. TWU/93/27

Teignmouth (Holcombe) ECB0111 is subject to occasional exceedance of EC mandatory values for both total and faecal coliforms (8 in all since monitoring began there in 1987). Four of these eight exceedances occurred before Holcombe Stream (ECBR0111) was regularly sampled so no correlation can be drawn between bacterial levels in the stream and in the bathing water. However three of these four bathing water samples had low salinities. Of the remaining four, three (faecal coliform results) show a good correlation between the actual result and the expected result calculated from stream bacterial counts and salinity of the bathing water sample. No calculated value could be obtained for total coliforms for 12/8/92 because the stream sample result was greater than 300000.

Date	Calculated	Actual
18/6/90	1135	2120
12/8/92	26400	30400
28/8/93	3600	2900

The very high results for 12/8/92 may also be linked to the 17.2mm of rain which fell on that day.

Information from both J.Treasaden (PI) and SWW indicates that sewage from Smugglers Lane Pumping Station discharges through a pipe onto Holcombe Beach. TWIU have visited the site on two occasions, but the precise details of sewerage in the area are still unclear. Site visits have revealed the following: (Letters in brackets refer to the photographs).

The stream which rises at Higher Holcombe (SX944748) skirts Holcombe village and is culverted under the A379 Teignmouth-Dawlish Road (A & B). On exiting the culvert, the stream cascades down a series of steps (C) and enters another culvert adjacent to Smugglers Lane Pumping Station (D). The stream re-appears some 60 metres further down Smugglers Lane below a garage. A 12" iron pipe 'discharges' here (E) (the pipe interior was totally clean and dry to the extent that it looks to be disused). The stream runs beside the road to a point just above the turning bay where it enters yet another culvert. It finally emerges from a pipe in the retaining wall (F) and flows across the beach and under the railway line (G).

There are a number of manholes along Smugglers Lane, and a cast iron pipe emerges from concrete encasement on the beach and runs along the NW side of the inlet and under the left hand arch of the railway viaduct (H). The pipe

ends under large granite blocks which protect the railway line on the seaward side of the viaduct (I). Under the railway arch, a small rectangular section has been cut from the side of the pipe (H & J) (presumably to act as an overflow to prevent surcharging).

Sampling from both pipe and stream on 16.06.93 gave the following results:

	Total Coliforms	Faecal Coliforms	Faecal Streptococci
Stream	11,000	8,400	2,900
Pipe	4,400,000	1,000,000	510,000

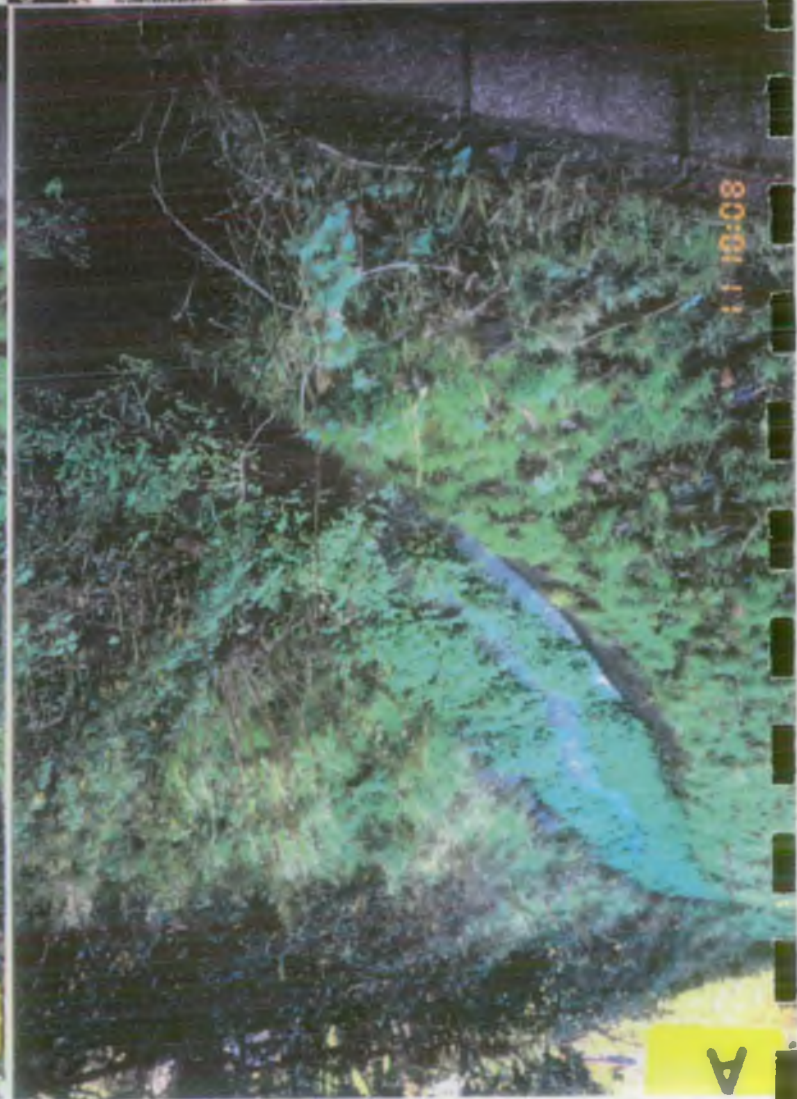
There are some public toilets at the bottom of Smugglers Lane (k) which probably discharge to the pipe.

SWW have confirmed that several properties are also connected to the storm sewer.

This pipe may therefore be the one referred to by SWW which serves as an emergency overflow for the pumping station at the top of Smugglers Lane. However, a number of sewage associated plastics were observed trapped in vegetation bordering the stream where it emerges from the culvert adjacent to the pumping station (L). Therefore, either there is an overflow in the culverted section near the pumping station, or the apparently disused iron pipe serves as some other unknown sewage overflow.

Samples taken both up, and down-stream of the culverted section do not indicate that contamination is occurring during dry weather.

Routine sampling staff have confirmed that their sampling line runs under the right hand arch of the railway bridge. Thus bathing water samples from this beach will be influenced by water/sewage from these two discharges. At or around high water this influence could be greater because contamination could become trapped within the inlet i.e. inside the railway bridge.



E



F



H



G





APPENDIX II

FILE NO.	

National Rivers Authority MESSAGE

FOR: Trevor Cronin

FROM:

Name: Anna Oliver

Address:

Telephone No:

SUBJECT: Teignmouth Hotel Assoc.

Please find attached correspondence I have had with the above. I have sent a holding letter & would be grateful if you would let them know more details of the investigation - your priority of it etc.

Many Thanks
Anna.

Time:

Date: 23/5/75 : Signature:

Teignmouth

Hotels & Caterers Association

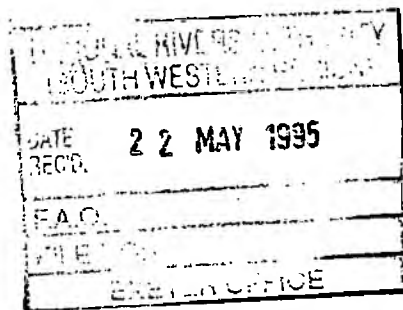


Chairman: Alan Ashby, St. Mellons, Orchard Gardens,
Teignmouth, TQ14 8DJ. (01626) 773134.
Secretary: Dudley Earle, Upwood, 5, Bligh Close,
Teignmouth, TQ14 9AL. (01626) 775889.

16th May, 1995.

Your Ref. AJC.

Ms. A. Close,
National Rivers Authority,
South Western Region,
Manley House,
Kestrel Way,
Exeter,
EX2 7LQ.



Dear Ms. Close,

EC Bathing Waters Directive - Teignmouth (Holcombe) Beach.

Thank you for your letter of 10th May.

I am pleased to note that the cause of contamination will be investigated. I am concerned, however, that such investigation is only "planned". Does this mean that there is likely to be a substantial delay? I trust this is merely my reading of your letter, and that the matter will be dealt with as a matter of urgency.

Yours sincerely,

A. Ashby

Alan Ashby,
Chairman,
Teignmouth Hotels & Caterers Association.

PTO

→ N. Morris

Teignmouth

Hotels & Caterers Association



Chairman: Alan Ashby, St. Mellons, Orchard Gardens,
Teignmouth, TQ14 8DJ. (01626) 773134.
Secretary: Dudley Earle, Upwood, 5, Bligh Close,
Teignmouth, TQ14 8DJ. (01626) 775889.

- 24th April, 1995.

The District Manager,
National Rivers Authority,
South Western Region,
Manley House,
Kestrel Way,
Exeter,
EX2 7LQ.

Dear Sir,

We have again read in the local Press that Holcombe Beach has
failed the clean bathing water ~~water~~ test again.

We urge you to carry out investigations without delay, in finding
out exactly where the pollutants are originating from, and take the
necessary action to eliminate this problem. We can then look forward
to cleaner bathing water, meeting the EC directive.

Yours faithfully,

A. Ashby

Alan Ashby,
Chairman,
Teignmouth Hotels & Caterers Association.

NATIONAL RIVERS AUTHORITY	
(SECRET)	
DATE	28 APR 1995
FILE NO.	
EXT. NO.	

PTD

APPENDIX III

PHOTOGRAPH LIST

- PHOTO 1 SHOWS.** The front of the pumphouse in 1995 showing The location of old inspection chamber containing weir.
- PHOTO 2 SHOWS.** The front of the pumphouse in 1996
- PHOTO 3 SHOWS.** The weir inside old inspection chamber.
- PHOTO 4 SHOWS.** The weir & screaning equipment inside new inspection chamber
- PHOTO 5 SHOWS.** The location new inspection chamber 1996.

PHOTO 1



PHOTO 2



PHOTO 3

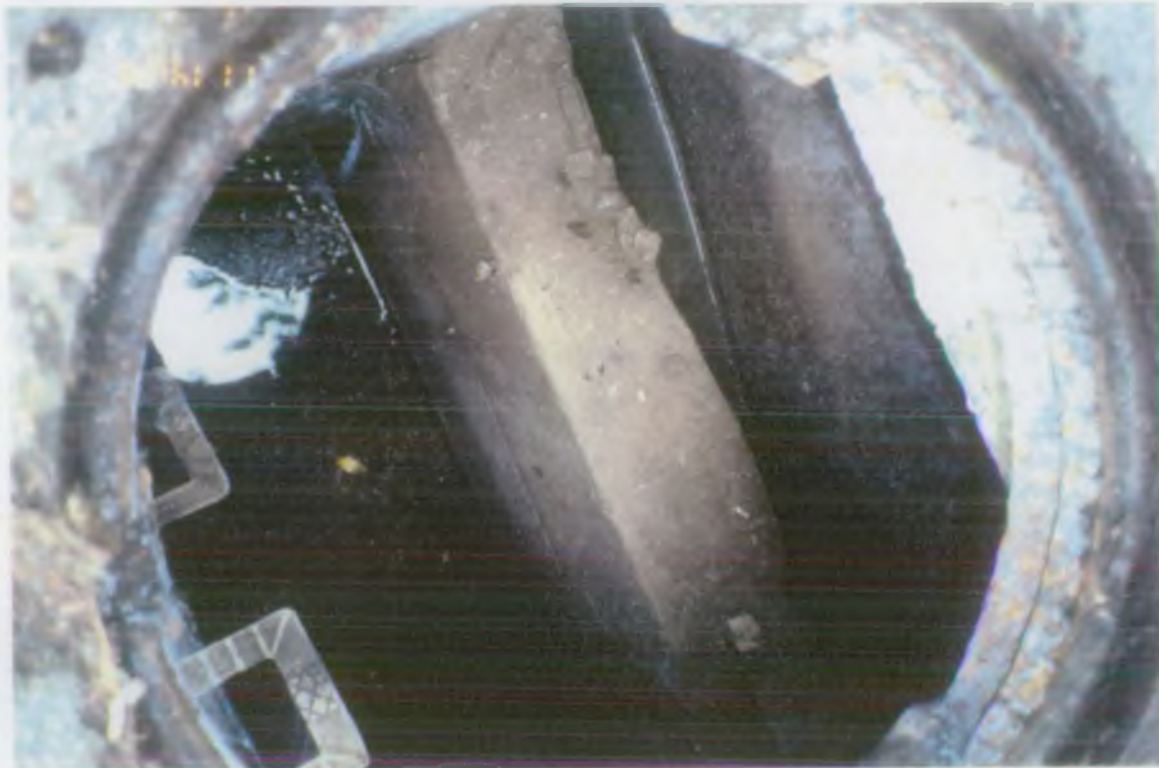


PHOTO 4



PHOTO 5



APPENDIX IV

HOLCOMBE MAP SHOWING LOCATION OF SAMPLE SITES

APPENDIX V

Sample Analysis Run Report 17-may-95

Laboratory Ref. : E439418
Date/Time Taken : 17-MAY-95 12:40
Tidal Exe

Sampling Point : INV/05A
Date/Time Received : 17-MAY-95 15:55

Address :

Sampler's Comments :
Site 1

Det.	Code	Description	Result
*942		Faecal Streptococci	240.0000 No/100 ml
*9933		Coliforms Presumptive Checked	1300.0000 No/100 ml
*9935		E.Coli Presumptive Checked	1400.0000 No/100 ml

Sample Analysis Run Report 17-may-95

Laboratory Ref. : E439419
Date/Time Taken : 17-MAY-95 12:50
Tidal Exe

Sampling Point : INV/05A
Date/Time Received : 17-MAY-95 15:55

Address :

Sampler's Comments :
Site 2

Det.	Code	Description	Result
*942		Faecal Streptococci	330.0000 No/100 ml
*9933		Coliforms Presumptive	1400.0000 No/100 ml
*9935		E.Coli Presumptive	1200.0000 No/100 ml

'*' Indicates that Laboratory Determination Method is NAMAS Accredited.

Sample Analysis Run Report 17-may-95

Laboratory Ref. : E439420
Date/Time Taken : 17-MAY-95 13:00
Tidal Exe

Sampling Point : INV/05A
Date/Time Received : 17-MAY-95 15:55

Address : Site 3

Det.	Code	Description	Result
*942		Faecal Streptococci	250.0000 No/100 ml
*9933		Coliforms Presumptive	1500.0000 No/100 ml
*9935		E.Coli Presumptive	1400.0000 No/100 ml

'*' Indicates that Laboratory Determination Method is NAMAS Accredited.

Sample Analysis Run Report 17-may-95

Laboratory Ref. : E439421
Date/Time Taken : 17-MAY-95 13:30
Tidal Exe

Sampling Point : INV/05A
Date/Time Received : 17-MAY-95 15:55

Address :

Sampler's Comments :
Site 4

Det.	Code	Description	Result
*942		Faecal Streptococci	250.0000 No/100 ml
*9933		Coliforms Presumptive	2400.0000 No/100 ml
*9935		E.Coli Presumptive	1600.0000 No/100 ml

Sample Analysis Run Report 17-may-95

Laboratory Ref. : E439422
Date/Time Taken : 17-MAY-95 14:00
Tidal Exe

Sampling Point : INV/05A
Date/Time Received : 17-MAY-95 15:56

Address :

Sampler's Comments :
Site 5

Sample Analysis Run Report 17-may-95

Laboratory Ref. : E439423
Date/Time Taken : 17-MAY-95 14:10
Tidal Exe

Sampling Point : INV/05A
Date/Time Received : 17-MAY-95 15:56

Address :

Sampler's Comments :
Site 6

Det.	Code	Description	Result
*942		Faecal Streptococci	260.0000 No/100 ml
*9933		Coliforms Presumptive	3700.0000 No/100 ml
*9935		E.Coli Presumptive	3000.0000 No/100 ml

'*' Indicates that Laboratory Determination Method is NAMAS Accredited.

Sample Analysis Run Report 17-may-95

Laboratory Ref. : E439424
Date/Time Taken : 17-MAY-95 14:30
Tidal Exe

Sampling Point : INV/05A
Date/Time Received : 17-MAY-95 15:56

Address :

Sampler's Comments :
Site 7

Det.	Code	Description	Result
*	42	Faecal Streptococci	260.0000 No/100 ml
*	933	Coliforms Presumptive	3400.0000 No/100 ml
*	935	E.Coli Presumptive	2900.0000 No/100 ml

Sample Analysis Run Report 17-may-95

Laboratory Ref. : E439425
Date/Time Taken : 17-MAY-95 14:45
Tidal Exe

Sampling Point : INV/05A
Date/Time Received : 17-MAY-95 15:56

Address :

Sampler's Comments :
Site 8

Det.	Code	Description	Result
*	42	Faecal Streptococci	180.0000 No/100 ml
*	933	Coliforms Presumptive	410.0000 No/100 ml
*	935	E.Coli Presumptive	210.0000 No/100 ml

Sample Analysis Run Report 17-may-95

Laboratory Ref. : E439426
Date/Time Taken : 17-MAY-95 15:00
Tidal Exe

Sampling Point : INV/05A
Date/Time Received : 17-MAY-95 15:56

Address :

Sampler's Comments :
Site 9

Det.	Code	Description	Result
*	42	Faecal Streptococci	3900.0000 No/100 ml
*	933	Coliforms Presumptive	7000.0000 No/100 ml
*	935	E.Coli Presumptive	3700.0000 No/100 ml

'' Indicates that Laboratory Determination Method is NAMAS Accredited.

Sample Analysis Run Report 18-may-95

Laboratory Ref. : E439690
Date/Time Taken : 18-MAY-95 12:30
Tidal Exe

Sampling Point : INV/05A
Date/Time Received : 18-MAY-95 14:32

Address :

Sampler's Comments :
Site 1 Beach At Normal Beach Site

Det.	Code	Description	Result
	942	Faecal Streptococci	150.0000 No/100 ml
	*9933	Coliforms Presumptive	70.0000 No/100 ml
	*9935	E.Coli Presumptive	10.0000 No/100 ml

Sample Analysis Run Report 18-may-95

Laboratory Ref. : E439691
Date/Time Taken : 18-MAY-95 12:40
Tidal Exe

Sampling Point : INV/05A
Date/Time Received : 18-MAY-95 14:32

Address :

Sampler's Comments :
Site 2 River At Pipe. Onto Beach

Det.	Code	Description	Result
	942	Faecal Streptococci	140.0000 No/100 ml
	*9933	Coliforms Presumptive	1400.0000 No/100 ml
	*9935	E.Coli Presumptive	650.0000 No/100 ml

Sample Analysis Run Report 18-may-95

Laboratory Ref. : E439692
Date/Time Taken : 18-MAY-95 13:30
Tidal Exe

Sampling Point : INV/05A
Date/Time Received : 18-MAY-95 14:32

Address :

Sampler's Comments :
Site 3 River By Garange U/S Of Discharge

Det.	Code	Description	Result
	942	Faecal Streptococci	210.0000 No/100 ml
	*9933	Coliforms Presumptive	1300.0000 No/100 ml
	*9935	E.Coli Presumptive	1100.0000 No/100 ml

'' Indicates that Laboratory Determination Method is NAMAS Accredited.

Sample Analysis Run Report 18-may-95

Laboratory Ref. : E439693
Date/Time Taken : 18-MAY-95 14:00
Tidal Exe

Sampling Point : INV/05A
Date/Time Received : 18-MAY-95 14:32

Address :

Sampler's Comments :
Site 4 River By Weir At Pump Station

Det.	Code	Description	Result
*42		Faecal Streptococci	120.0000 No/100 ml
*933		Coliforms Presumptive	1300.0000 No/100 ml
*9935		E.Coli Presumptive	1300.0000 No/100 ml

'*' Indicates that Laboratory Determination Method is NAMAS Accredited.

Sample Analysis Run Report 22-may-95

Laboratory Ref. : E440435
Date/Time Taken : 22-MAY-95 14:06
Tidal Exe

Sampling Point : INV/05A
Date/Time Received : 22-MAY-95 17:24

Address :

Sampler's Comments :
Site 1 Beach

Det.	Code	Description	Result
	942	Faecal Streptococci	< 10.0000 No/100 ml
	9933	Coliforms Presumptive	10.0000 No/100 ml
*	9935	E.Coli Presumptive	< 10.0000 No/100 ml

Sample Analysis Run Report 22-may-95

Laboratory Ref. : E440436
Date/Time Taken : 22-MAY-95 14:07
Tidal Exe

Sampling Point : INV/05A
Date/Time Received : 22-MAY-95 17:24

Address :

Sampler's Comments :
Site 2 Pipe. High S.Solids

Det.	Code	Description	Result
	942	Faecal Streptococci	460.0000 No/100 ml
*	9933	Coliforms Presumptive	4400.0000 No/100 ml
*	9935	E.Coli Presumptive	2900.0000 No/100 ml

Sample Analysis Run Report 22-may-95

Laboratory Ref. : E440437
Date/Time Taken : 22-MAY-95 14:10
Tidal Exe

Sampling Point : INV/05A
Date/Time Received : 22-MAY-95 17:24

Address :

Sampler's Comments :
Site 3 Garage. High S.Solids

Det.	Code	Description	Result
	942	Faecal Streptococci	620.0000 No/100 ml
*	9933	Coliforms Presumptive	2500.0000 No/100 ml
*	9935	E.Coli Presumptive	2400.0000 No/100 ml

'*' Indicates that Laboratory Determination Method is NAMAS Accredited.

Sample Analysis Run Report 22-may-95

Laboratory Ref. : E440438 Sampling Point : INV/05A
Date/Time Taken : 22-MAY-95 14:15 Date/Time Received : 22-MAY-95 17:24
Tidal Exe

Address :

Sampler's Comments :
Site 4 Pump Station. High S.Solids

Det.	Code	Description	Result
*42		Faecal Streptococci	820.0000 No/100 ml
*933		Coliforms Presumptive	4400.0000 No/100 ml
*9935		E.Coli Presumptive	2700.0000 No/100 ml

'' Indicates that Laboratory Determination Method is NAMAS Accredited.

Sample Analysis Run Report 20-jun-95

Laboratory Ref. : E448791
Date/Time Taken : 20-JUN-95 13:15
Tidal Exe

Sampling Point : INV/05A
Date/Time Received : 20-JUN-95 15:18

Address :

Sampler's Comments :
Normal Beach Site

Det.	Code	Description	Result
	942	Faecal Streptococci	< 10.0000 No/100 ml
	*9933	Coliforms Presumptive	< 10.0000 No/100 ml
	*9935	E.Coli Presumptive	< 10.0000 No/100 ml

Sample Analysis Run Report 20-jun-95

Laboratory Ref. : E448792
Date/Time Taken : 20-JUN-95 13:25
Tidal Exe

Sampling Point : INV/05A
Date/Time Received : 20-JUN-95 15:18

Address :

Sampler's Comments :
Normal Site By Toilets

Det.	Code	Description	Result
	942	Faecal Streptococci	1500.0000 No/100 ml
	*9933	Coliforms Presumptive	10000.0000 No/100 ml
	*9935	E.Coli Presumptive	6000.0000 No/100 ml

Sample Analysis Run Report 20-jun-95

Laboratory Ref. : E448793
Date/Time Taken : 20-JUN-95 13:35
Tidal Exe

Sampling Point : INV/05A
Date/Time Received : 20-JUN-95 15:18

Address :

Sampler's Comments :
Site By Garage

Det.	Code	Description	Result
	942	Faecal Streptococci	1500.0000 No/100 ml
	*9933	Coliforms Presumptive	14000.0000 No/100 ml
	*9935	E.Coli Presumptive	5000.0000 No/100 ml

'*' Indicates that Laboratory Determination Method is NAMAS Accredited.

Sample Analysis Run Report 20-jun-95

Laboratory Ref. : E448794

Sampling Point : INV/05A

Date/Time Taken : 20-JUN-95 13:40

Date/Time Received : 20-JUN-95 15:18

Tidal Exe

Address :

Sampler's Comments :

Site By Pump

Det.	Code	Description	Result
42		Faecal Streptococci	1200.0000 No/100 ml
933		Coliforms Presumptive	19000.0000 No/100 ml
9935		E.Coli Presumptive	6300.0000 No/100 ml

'' Indicates that Laboratory Determination Method is NAMAS Accredited.

Sample Analysis Run Report 20-jun-95

Laboratory Ref. : E448791
Date/Time Taken : 20-JUN-95 13:15
Tidal Exe

Sampling Point : INV/05A
Date/Time Received : 20-JUN-95 15:18

Address :

Sampler's Comments :
Normal Beach Site

Det.	Code	Description	Result
	42	Faecal Streptococci	< 10.0000 No/100 ml
	933	Coliforms Presumptive	< 10.0000 No/100 ml
	*9935	E.Coli Presumptive	< 10.0000 No/100 ml

Sample Analysis Run Report 20-jun-95

Laboratory Ref. : E448792
Date/Time Taken : 20-JUN-95 13:25
Tidal Exe

Sampling Point : INV/05A
Date/Time Received : 20-JUN-95 15:18

Address :

Sampler's Comments :
Normal Site By Toilets

Det.	Code	Description	Result
	42	Faecal Streptococci	1500.0000 No/100 ml
	*9933	Coliforms Presumptive	10000.0000 No/100 ml
	*9935	E.Coli Presumptive	6000.0000 No/100 ml

Sample Analysis Run Report 20-jun-95

Laboratory Ref. : E448793
Date/Time Taken : 20-JUN-95 13:35
Tidal Exe

Sampling Point : INV/05A
Date/Time Received : 20-JUN-95 15:18

Address :

Sampler's Comments :
Site By Garage

Det.	Code	Description	Result
	42	Faecal Streptococci	1500.0000 No/100 ml
	*9933	Coliforms Presumptive	14000.0000 No/100 ml
	*9935	E.Coli Presumptive	5000.0000 No/100 ml

'*' Indicates that Laboratory Determination Method is NAMAS Accredited.

Sample Analysis Run Report 20-jun-95

Laboratory Ref. : E448794 Sampling Point : INV/05A
Date/Time Taken : 20-JUN-95 13:40 Date/Time Received : 20-JUN-95 15:18
Tidal Exe

Address :

Sampler's Comments :
Site By Pump

Det.	Code	Description	Result
42		Faecal Streptococci	1200.0000 No/100 ml
933		Coliforms Presumptive	19000.0000 No/100 ml
*9935		E.Coli Presumptive	6300.0000 No/100 ml

'*' Indicates that Laboratory Determination Method is NAMAS Accredited.

Sample Analysis Run Report 04-jul-95

Laboratory Ref. : E453141
Date/Time Taken : 04-JUL-95 13:16
Tidal Exe

Sampling Point : INV/05A
Date/Time Received : 04-JUL-95 14:49

Address :

Sampler's Comments :
Beach Site

Det.	Code	Description	Result
942		Faecal Streptococci	< 10.0000 No/100 ml
9933		Coliforms Presumptive	< 10.0000 No/100 ml
*9935		E.Coli Presumptive	10.0000 No/100 ml
		Checked	

Sample Analysis Run Report 04-jul-95

Laboratory Ref. : E453142
Date/Time Taken : 04-JUL-95 13:15
Tidal Exe

Sampling Point : INV/05A
Date/Time Received : 04-JUL-95 14:49

Address :

Sampler's Comments :
Stream Discharge To Beach

Det.	Code	Description	Result
942		Faecal Streptococci	150.0000 No/100 ml
*9933		Coliforms Presumptive	10100.0000 No/100 ml
*9935		E.Coli Presumptive	510.0000 No/100 ml

Sample Analysis Run Report 04-jul-95

Laboratory Ref. : E453143
Date/Time Taken : 04-JUL-95 13:21
Tidal Exe

Sampling Point : INV/05A
Date/Time Received : 04-JUL-95 14:49

Address :

Sampler's Comments :
Stream Below Garage

Det.	Code	Description	Result
942		Faecal Streptococci	250.0000 No/100 ml
*9933		Coliforms Presumptive	14000.0000 No/100 ml
*9935		E.Coli Presumptive	900.0000 No/100 ml

'*' Indicates that Laboratory Determination Method is NAMAS Accredited.

Sample Analysis Run Report 04-jul-95

Laboratory Ref. : E453144
Date/Time Taken : 04-JUL-95 13:20
Tidal Exe

Sampling Point : INV/05A
Date/Time Received : 04-JUL-95 14:49

Address :

Sampler's Comments :
Stream Behind Pumphouse

Det.	Code	Description	Result
*42		Faecal Streptococci	320.0000 No/100 ml
*933		Coliforms Presumptive	24000.0000 No/100 ml
*9935		E.Coli Presumptive	900.0000 No/100 ml

'*' Indicates that Laboratory Determination Method is NAMAS Accredited.

Sample Analysis Run Report 14-sep-95

Laboratory Ref. : E477697

Sampling Point : INV/05A

Date/Time Taken : 14-SEP-95 13:21

Date/Time Received : 14-SEP-95 14:29

Tidal Exe

Address : Beach

Det. Code	Description	Result
942	Faecal Streptococci	1400.0000 No/100 ml
*9933	Coliforms Presumptive	98000.0000 No/100 ml
*9935	E.Coli Presumptive	2500.0000 No/100 ml

Sample Analysis Run Report 14-sep-95

Laboratory Ref. : E477698

Sampling Point : INV/05A

Date/Time Taken : 14-SEP-95 13:26

Date/Time Received : 14-SEP-95 14:29

Tidal Exe

Address :

Det. Code	Description	Result
942	Faecal Streptococci	2900.0000 No/100 ml
*9933	Coliforms Presumptive	16000.0000 No/100 ml
*9935	E.Coli Presumptive	13000.0000 No/100 ml

Sample Analysis Run Report 14-sep-95

Laboratory Ref. : E477699

Sampling Point : INV/05A

Date/Time Taken : 14-SEP-95 13:30

Date/Time Received : 14-SEP-95 14:29

Tidal Exe

Address :

Det. Code	Description	Result
942	Faecal Streptococci	2900.0000 No/100 ml
*9933	Coliforms Presumptive Checked	14000.0000 No/100 ml
*9935	E.Coli Presumptive Checked	15000.0000 No/100 ml

'' Indicates that Laboratory Determination Method is NAMAS Accredited.

Sample Analysis Run Report 14-sep-95

Laboratory Ref. : E477700
Date/Time Taken : 14-SEP-95 13:31
Tidal Exe

Sampling Point : INV/05A
Date/Time Received : 14-SEP-95 14:29

Address :

Sampler's Comments :
Site Inaccessible Sww Plc Excavating For Works Improvement

Det.	Code	Description	Result	
42		Faecal Streptococci	Anal.	Not Pos
933		Coliforms Presumptive	Anal.	Not Pos
9935		E.Coli Presumptive	Anal.	Not Pos

'*' Indicates that Laboratory Determination Method is NAMAS Accredited.

Sample Analysis Run Report 24-sep-95

Laboratory Ref. : E480992
Date/Time Taken : 24-SEP-95 13:20
Tidal Exe

Sampling Point : INV/05A
Date/Time Received : 24-SEP-95 15:14

Address :

Sampler's Comments :
Sea Sample

Det.	Code	Description	Result
	942	Faecal Streptococci	80.0000 No/100 ml
	9933	Coliforms Presumptive	2000.0000 No/100 ml
	*9935	E.Coli Presumptive	230.0000 No/100 ml

Sample Analysis Run Report 24-sep-95

Laboratory Ref. : E480993
Date/Time Taken : 24-SEP-95 13:25
Tidal Exe

Sampling Point : INV/05A
Date/Time Received : 24-SEP-95 15:14

Address :

Sampler's Comments :
Stream @ Discharge

Det.	Code	Description	Result
	942	Faecal Streptococci	5000.0000 No/100 ml
	9933	Coliforms Presumptive	21000.0000 No/100 ml
	*9935	E.Coli Presumptive	21000.0000 No/100 ml

Sample Analysis Run Report 24-sep-95

Laboratory Ref. : E480994
Date/Time Taken : 24-SEP-95 13:30
Tidal Exe

Sampling Point : INV/05A
Date/Time Received : 24-SEP-95 15:14

Address :

Sampler's Comments :
Stream Below Garage

Det.	Code	Description	Result
	942	Faecal Streptococci	4000.0000 No/100 ml
	9933	Coliforms Presumptive	20000.0000 No/100 ml
	*9935	E.Coli Presumptive	20000.0000 No/100 ml

'*' Indicates that Laboratory Determination Method is NAMAS Accredited.

Sample Analysis Run Report 24-sep-95

Laboratory Ref. : E480995 Sampling Point : INV/05A
Date/Time Taken : 24-SEP-95 13:35 Date/Time Received : 24-SEP-95 15:14
Tidal Exe

Address :

Sampler's Comments :
Stream Above Pumping Station

Det.	Code	Description	Result
*42		Faecal Streptococci	5300.0000 No/100 ml
*933		Coliforms Presumptive	21000.0000 No/100 ml
*9935		E.Coli Presumptive	18000.0000 No/100 ml

'*' Indicates that Laboratory Determination Method is NAMAS Accredited.

APPENDIX VI

MONTH YEAR (MAY)(1995)
STATION (RF360863)
DESCRIPTION LUSCOMBE CASTLE
SX-9430-7680
ALTITUDE 59 METRES
ATTACHMENT COASTAL

DAILY RAINFALL VALUES ARE SHOWN
IN MILLIMETRES.

MONTHLY LTA (1941-70) 76 MM

(C.YR)

0.0	11	3.0	21	0.0
0.0	12	0.0	22	0.0
0.0	13	0.0	23	0.0
0.0	14	0.0	24	0.6
0.0	15	0.3	25	1.2
0.0	16	3.8	26	17.4
0.0	17	0.0	27	12.7
0.0	18	0.0	28	0.3
0.0	19	0.0	29	6.0
0.0	20	0.0	30	0.0
			31	0.0

MONTHLY TOTAL 50.5

Enter M to return to MENU or ? for HELP ()

TYPE ONLINE READY

MONTH YEAR (JUN)(1995)
STATION (RF360863)
DESCRIPTION LUSCOMBE CASTLE
SX-9430-7680
ALTITUDE 59 METRES
ATTACHMENT COASTAL

DAILY RAINFALL VALUES ARE SHOWN
IN MILLIMETRES.

MONTHLY LTA (1941-70) 52 MM

(C.YR)

0.0	11	0.5	21	0.0
0.0	12	0.0	22	0.0
5.3	13	0.0	23	0.0
0.0	14	0.0	24	0.0
0.0	15	0.0	25	0.0
0.0	16	0.0	26	0.0
0.0	17	1.2	27	0.0
0.0	18	0.0	28	0.0
0.0	19	0.0	29	0.0
0.0	20	0.0	30	0.0

MONTHLY TOTAL 7.0

Enter M to return to MENU or ? for HELP ()

TYPE ONLINE READY

MONTH YEAR (JUL)(1995)
STATION (RF360863)
DESCRIPTION LUSCOMBE CASTLE
SX-9430-7680
ALTITUDE 59 METRES
ATTACHMENT COASTAL

DAILY RAINFALL VALUES ARE SHOWN
IN MILLIMETRES.

MONTHLY LTA (1941-70) 62 MM

(C.YR)

0.0	11	0.0	21	0.0
4.4	12	0.0	22	0.0
0.0	13	3.1	23	0.0
0.0	14	5.4	24	0.0
0.0	15	0.1	25	6.7
0.0	16	0.0	26	3.3
0.0	17	0.0	27	0.0
0.0	18	0.0	28	0.0
0.0	19	0.0	29	0.0
0.0	20	0.0	30	0.0

Monthly Total 26.4

MONTH YEAR (AUG)(1995)
STATION (RF360863)
DESCRIPTION LUSCOMBE CASTLE
SX-9430-7680
ALTITUDE 59 METRES
CATCHMENT COASTAL

DAILY RAINFALL VALUES ARE SHOWN
IN MILLIMETRES.

MONTHLY LTA (1941-70) 77 MM

(C.YR)

1	0.0	11	0.0	21	0.0
	0.0	12	0.0	22	2.9
	0.0	13	0.0	23	2.1
4	0.0	14	0.0	24	0.0
	0.0	15	0.0	25	0.0
	0.0	16	0.0	26	0.0
	0.0	17	0.0	27	0.0
3	0.0	18	0.0	28	0.0
	0.0	19	0.0	29	0.0
	0.0	20	0.0	30	0.0
				31	0.0

MONTHLY TOTAL 5.0

Enter M to return to MENU or ? for HELP ()

TYPE ONLINE READY

MONTH YEAR (SEP)(1995)
STATION (RF360863)
DESCRIPTION LUSCOMBE CASTLE
SX-9430-7680
ALTITUDE 59 METRES
CATCHMENT COASTAL

DAILY RAINFALL VALUES ARE SHOWN
IN MILLIMETRES.

NB DATA NOT FULLY QUALITY CONTROLLED

MONTHLY LTA (1941-70) 35 MM

(C.YR)

	0.0	11	5.3	21	0.0
	0.2	12	3.2	22	0.0
	0.0	13	1.3	23	1.6
4	8.0	14	4.9	24	0.0
	0.0	15	0.0	25	0.0
	23.6	16	0.0	26	13.8
7	8.8	17	0.0	27	0.2
	0.0	18	9.7	28	0.0
	9.3	19	0.0	29	0.0
	44.7	20	0.0	30	1.5

MONTHLY TOTAL 136.1

Enter M to return to MENU or ? for HELP ()

REJECTED : INVALID FORMAT

TYPE ONLINE READY

MONTH YEAR (OCT)(1995)
STATION (RF360863)
DESCRIPTION LUSCOMBE CASTLE
SX-9430-7680
ALTITUDE 59 METRES
CATCHMENT COASTAL

DAILY RAINFALL VALUES ARE SHOWN
IN MILLIMETRES.

NB DATA NOT FULLY QUALITY CONTROLLED

MONTHLY LTA (1941-70) 92 MM

(C.YR)

	0.0	11	0.0	21	0.0
	0.0	12	0.0	22	0.0
	9.1	13	0.0	23	0.3
	0.7	14	0.4	24	22.8
	3.4	15	0.0	25	0.0
		16	0.0	26	21.3
	33.2	17	0.0	27	0.0
	0.0	18	0.0	28	0.2
	0.0	19	0.0	29	0.0
	0.0	20	0.3	30	0.0
				31	0.0

MONTHLY TOTAL 97.7

ANALYTICAL SUMMARY OF:-

TIDAL EXE

Date	Time	Type	Purp	Mat	STREPT OCOCC /100ML	COLI- FORMS PRES.	E.COLI PRES.
170595	1240	SQMR	2F		240	1300	1400
170595	1250	SQMR	2F		330	1400	1200
170595	1300	SQMR	2F		250	1500	1400
170595	1330	SQMR	2F		250	2400	1600
170595	1400	SQMR	2F		250	2400	2200
170595	1410	SQMR	2F		260	3700	3000
170595	1430	SQMR	2F		260	3400	2900
170595	1445	SQMR	2F		180	410	310
170595	1500	SQMR	2F		3900	7000	3700
180595	1230	SQMR	2F		150	70	10
180595	1240	SQMR	2F		140	1400	650

Type "C" to Continue, "P" for previous screen, "Q" to Quit { }

TYPE

ONLINE

READY

ANALYTICAL SUMMARY OF:-

TIDAL EXE

Date	Time	Type	Purp Mat	STREPT COLI- OCOCC FORMS /100ML PRES.	E.COLI PRES.
180595	1330	SQMR	2F	210	1300 1100
180595	1333	SFWI	2I		
180595	1335	SFWI	2I		
180595	1337	SFWI	2I		
180595	1400	SQMR	2F	120	1300 1300
20595	1406	SQMR	2F	10<	10 10<
220595	1407	SQMR	2F	460	4400 2900
20595	1410	SQMR	2F	620	2500 2400
20595	1415	SQMR	2F	820	4400 2700
020695	1106	SQMR	2F	40	30 20
20695	1111	SQMR	2F	1400	2900 3100

Type "C" to Continue, "P" for previous screen, "Q" to Quit { }

TYPE

ONLINE

READY

ANALYTICAL SUMMARY OF:-

TIDAL EXE

Date	Time	Type	Purp Mat	STREPT COLI- OCOCC FORMS /100ML PRES.	E. COLI PRES.
020695	1113	SQMR	2F	420	1300 620
020695	1115	SQMR	2F	540	1500 1200
000695	1315	SQMR	2F	10<	10< 10<
200695	1325	SQMR	2F	1500	10000 6000
000695	1335	SQMR	2F	1500	14000 5000
000695	1340	SQMR	2F	1200	19000 6300
300695	1126	SQMR	2F	10<	50 10<
000695	1127	SQMR	2F	390	62000 640
000695	1130	SQMR	2F	600	33000 8900
300695	1132	SQMR	2F	1600	24000 9400
40795	1315	SQMR	2F	150	10100 510

Type "C" to Continue, "P" for previous screen, "Q" to Quit { }

TYPE

ONLINE

READY

ANALYTICAL SUMMARY OF:-

TIDAL EXE

Date	Time	Type	Purp	Mat	STREPT OCOCC /100ML	COLI- FORMS PRES.	E.COLI PRES.
250895	1300	SQMR	2F		530	2800	2500
250895	1305	SQMR	2F		650	3400	1700
250895	1121	SQMR	2F		10	90	40
310895	1126	SQMR	2F		490	4600	3900
250895	1130	SQMR	2F		330	5400	4400
250895	1131	SQMR	2F		510	7000	4700
060995	1115	SQMR	2F		6900	48000	51000
060995	1120	SQMR	2F		40	540	260
060995	1126	SQMR	2F		124000	300000	>300000>
060995	1130	SQMR	2F		90000	300000	>300000>
060995	1321	SQMR	2F		1400	98000	2500

Type "C" to Continue, "P" for previous screen, "Q" to Quit { }

TYPE

ONLINE

READY

ANALYTICAL SUMMARY OF:-

TIDAL EXE

Date	Time	Type	Purp	Mat	STREPT OCOCC /100ML	COLI- FORMS PRES.	E.COLI PRES.
140995	1326	SQMR	2F		2900	16000	13000
140995	1330	SQMR	2F		2900	14000	15000
140995	1320	SQMR	2F		80	2000	230
240995	1325	SQMR	2F		5000	21000	21000
240995	1330	SQMR	2F		4000	20000	20000
140995	1335	SQMR	2F		5300	21000	18000

Type "C" to Continue, "P" for previous screen, "Q" to Quit { }

TYPE

ONLINE

READY

ANALYTICAL SUMMARY OF:-

TIDAL EXE

Date	Time	Type	Purp	Mat	STREPT COLI- OCOCC FORMS /100ML PRES.	E.COLI PRES.	
040795	1316	SQMR	2F		10<	10<	10
040795	1320	SQMR	2F		320	24000	900
040795	1321	SQMR	2F		250	14000	900
100795	1250	SQMR	2F		1400	9600	670
100795	1255	SQMR	2F		10	150	40
100795	1305	SQMR	2F		1200	25000	930
100795	1310	SQMR	2F		1590	21000	1500
180795	1120	SQMR	2I		2200	12000	18000
180795	1122	SQMR	2I		1600	11000	9000
280795	1124	SQMR	2I		2300	23000	19000
108895	1255	SQMR	2I		2100	12000	4400

Type "C" to Continue, "P" for previous screen, "Q" to Quit { }

TYPE

ONLINE

READY

ANALYTICAL SUMMARY OF:-

TIDAL EXE

Date	Time	Type	Purp Mat	STREPT COLI- OCOCC FORMS /100ML PRES.	E.COLI PRES.	
010895	1300	SQMR	2I	5000	10000	6100
010895	1305	SQMR	2I	9000	16000	8000
070895	1121	SQMR	2I	1900	13000	5300
070895	1124	SQMR	2I	2200	6600	5800
070895	1129	SQMR	2I	2400	10000	4800
050895	1435	SQMR	2F	60	30	20
150895	1440	SQMR	2F	680	12000	9600
050895	1445	SQMR	2F	1500	15000	11000
050895	1450	SQMR	2F	2500	11000	11000
250895	1245	SQMR	2F	460	3700	1300
050895	1250	SQMR	2F	20	160	10<

Type "C" to Continue, "P" for previous screen, "Q" to Quit { }

TYPE

ONLINE

READY