

# Environmental Protection Final Draft Report

## REGIONAL WATER QUALITY MONITORING AND SURVEILLANCE PROGRAMME FOR 1993

### QUALITY INVESTIGATIONS IN CONTROLLED WATERS

June 1993

WQP/93/003

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**NRA**

*National Rivers Authority  
South West Region*

REGIONAL WATER QUALITY MONITORING SURVEILLANCE PROGRAMME FOR 1993

QUALITY INVESTIGATIONS IN CONTROLLED WATERS

TECHNICAL REPORT NO. WQP/93/003

SUMMARY

The Freshwater and Tidal Waters Investigation Teams carry out non-routine water quality monitoring. Work programmes are targeted at determining the cause of non-compliance with quality standards and assessing the extent of impact of certain discharges on receiving waters.

A total of 4,980 water samples and 1,420 biological samples are estimated to be collected in 1993. Since it is not possible to estimate the number of determinands to be analysed, the Laboratory Controller has agreed a laboratory workload quota of equivalent to 2.6 analysts (FTE).

Full details of the work programme are given in the report.

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June 1993



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REGIONAL WATER QUALITY MONITORING AND SURVEILLANCE PROGRAMME FOR 1993

QUALITY INVESTIGATION IN CONTROLLED WATERS.

1. INTRODUCTION TO THE 1993 PROGRAMME

The quality investigations programme covers the non-routine aspects of water quality monitoring, with the exception of the majority of pollution events which are handled by Pollution Control staff.

The Freshwater Investigations Team (FWIT) was set up to fulfil the following functions:-

- (a) The assessment of the causes of non-compliance with standards relating to EC Directives. For example, the River Venn investigation in respect of the EC Freshwater Fish Directive.
- (b) The assessment of the causes of non-compliance with standards relating to Statutory Water Quality Objectives and River Quality Objectives. For example, the Alphin Brook Investigation.
- (c) Impact assessment studies to assess the extent of impact of certain discharges on the receiving watercourse. For example, impact assessment of Meldon Quarry.
- (d) Impact assessment of storm sewer overflows on water quality and to priority rate their impact for the setting of new consents.
- (e) Performance appraisal of discharges for inland sewage treatment works in SWWS Ltd capital improvement programme.
- (f) Involvement with major regional projects assessing the impact of contaminated land and the disused mines on water quality. For example, impact assessment of Wheal Jane Mine on watercourses in the Carnon Valley.
- (g) The development, operating and maintenance of continuous monitors and telemetry systems in freshwaters. For example, monitors downstream of Roadford Reservoir (see Report No. FWI/92/026).

The requirement for investigational work in Tidal Waters is driven by a number of factors as follows:-

- (a) Non-compliance with the EC Bathing Water Directive as highlighted by routine monitoring programmes. Investigations are undertaken to identify and quantify sources of contamination resulting in non-compliance.
- (b) Non-compliance with other EC Directives, notably the EC Dangerous Substances Directive. For example, the impact of the Wheal Jane mine leachate on tidal water quality.

- (c) Post-commissioning monitoring for major improvement schemes, where monitoring effort is designed to ensure target Water Quality Standards are being met. For example, Teignmouth Long Sea Outfall Post-Scheme Appraisal.
- (d) Programmes to monitor the environmental impact of construction activities licensed by NRA.
- (e) Programmes to assist in the determination of consents for significant discharges to tidal waters not covered by the above. For example, impact of effluent plume from Newham STW, Truro River.
- (f) Monitoring to assess the impact of proposed water resources schemes on estuarine water quality. For example, impact of proposed scheme on Axe Estuary.
- (g) Monitoring programmes to ensure non-deterioration of water quality as a result of flood defence schemes, developments, or any other activity which influences the nature of the water circulation and flushing.
- (h) Monitoring surveys to provide expert support for major pollution incidents affecting tidal waters. For example, potentially toxic algal blooms.
- (i) Other investigations.

The number of samples collected in 1993 is estimated as follows:-

	<u>Water and Sediment Chemical/Microbiological</u>	<u>Biology</u>
Freshwater Investigation Team	1,200	1,150
Tidal Waters Investigation Unit	3,780	270

## 2. WORK PROGRAMME

### 2.1. Freshwater Investigation Team

The work programme for the Freshwater team is assessed approximately every 4 months. The programme for January - July 1993 is attached.

### 2.2. Tidal Waters Investigation Unit

The provisional 1993 programme for investigations relating to tidal water is as follows:-

#### 2.2.1. Non-Compliance with EC Bathing Water Directive

##### (a) Camel Estuary

Sampling of Freshwater inputs to the Camel Estuary to assess bacterial loadings to the estuary, January - November.

- (b) **Exe Estuary**  
Sampling of Freshwater inputs to the Exe Estuary to assess bacterial loadings to the estuary, January - November.
- (c) **Aveton Gifford STW**  
Tracer studies to determine dilution and dispersion of effluent from Aveton Gifford STW within Avon Estuary.
- (d) **Hessenford, Seaton River**  
Intensive survey in wet weather to determine impact of private discharges from Hessenford.
- (e) **Porthallow**  
Plume dye and tracer survey to assess suitable treatment level and discharge location to ensure bathing water compliance.
- (f) **St Columb Major STW**  
Discharge from STW into River Menalhyl to be ceased for circa 12 hours to establish impact of works on bathing waters at Mawgan Porth.
- (g) **Looe STW**  
Tracer survey to determine dilution of STW effluent at estuary mouth.
- (h) **Freshwater Bacterial Surveys to Identify Controllable Point Sources of Bacterial Contamination**  
  - St Austell River
  - Perranporth and Bolingey Streams
  - Hele River
  - Rivers Neat and Strat
  - Polzeath Stream
  - Dawlish Stream
  - Porthcothan Stream
  - Torre Abbey Stream
  - River Gannel
  - Trevaunance Cove Stream
  - Parts of the River Umber Catchment
  - Salcombe North Sands Stream
  - East and West Lyn Rivers
- (i) **Desk Studies Relating to Bathing Water Failure**  
  - Maen Porth
  - Goverack
  - Teignmouth, Holcombe
  - Porth
  - Porth Joke
  - Saunton Sands

### 2.2.2. Non-Compliance with other EC Directives

#### (a) Wheal Jane Mine Leachate

Investigations to assess the impact of mine leachate on tidal water and sediment quality.

January, July - Major spring and neap tide surveys.

January to March - Continuous WQ monitoring at the mouth Restronguet Creek.

Monthly - Biological and bio-accumulation monitoring.

#### (b) Newlyn Harbour

Water and sediment quality investigation.

### 2.2.3. Post-Commissioning Monitoring

#### (a) Par

Monitoring the impact of the effluent plume from the newly-commissioned Long Sea Outfall on bathing waters under worst-case environmental conditions.

#### (b) Teignmouth

Monitoring the impact of the effluent plume from the newly-commissioned Long Sea Outfall on bathing waters under worst-case environmental conditions.

### 2.2.4 Sewerage Discharge Consent Determination

#### (a) Newham STW

Automatic water quality monitoring (February onwards) and intensive surveys to determine the impact of the plume on levels of ammonia, BOD and DO in the Truro River.

#### (b) Countess Wear STW

Automatic water quality monitoring (May onwards) and intensive surveys to determine the impact of the plume on levels of ammonia, BOD and DO in the Truro River.

#### (c) Rock, Camel Estuary

Bathymetric survey in vicinity of proposed sewage outfall to assist in the assessment of the stability of the sea-bed.

### 2.2.5 Monitoring the Impact of Proposed Water Resources Schemes

#### (a) Automatic water quality monitoring to assess impact of freshwater flow on Axe Estuary water quality - January only.

2.2.6 Monitoring of Impact on Water Quality of developments and Flood Defence Schemes

- (a) Monitoring of water and sediment quality in Sutton Harbour to assess impact of the Flood Defence Scheme.

Project managed by Tidal Waters Investigation Unit, and undertaken by contractors. Bi-monthly surveys and continuous water quality monitoring.

2.2.7 Other Investigations

- (a) Dart Estuary Survey

Survey to assess best strategy for routine estuarine monitoring.

- (b) Ammonia Monitors

Assessment of automatic ammonia monitors.

3. SAMPLING BREAKDOWN

3.1. Freshwater Investigations Team

	<u>Chemical Samples</u>	<u>Biology Samples</u>
Non-Compliance Investigations		
EC Directives	300	150
SWQO/RQO	600	900
Impact Assessment		
Effluent Discharges	200	100
Bioaccumulation Investigations	50	-
Sediments	50	-
TOTAL	<u>1,200</u>	<u>1,150</u>

3.2. Tidal Waters Investigation Unit

	<u>Water &amp; Sediment Microbiology &amp; Chemical Samples</u>	<u>Biology Samples</u>
<u>Monitoring of Rivers and Canals</u>		
Non-Compliance Investigations		
EC Bathing Water Directive	2,220	



Monitoring of Estuaries

Non-Compliance Investigations - EC Bathing Water Directive	160	
Impact Assessment of Effluent Discharges	700	15
Impact Assessment of Developments/ Activities		5
Other Quality Investigations	120	
Bioaccumulation Investigations		50
Pollution Incident Support		25
Algal Investigations		30
Sediments	10	

Monitoring of Coastal Waters

Non-Compliance Investigations - EC Bathing Water Directive	230	
Impact Assessment of Effluent Discharges	200	10
Bioaccumulation Investigations		15
Impact Assessment of Developments/ Activities		30
Algal Investigations		30

Operational Investigations

Estuaries - Impact of Wheal Jane Discharge	140	60
TOTAL	<u>3,780</u>	<u>270</u>

4. ENDORSEMENT

The contents of this programme have been agreed by the Water Quality Planner and the Laboratory Controller.

### Freshwater Investigation Team - Work Programme 1993

	Staff	January	February	March
<b>PC 3: Statutory Water Quality Objectives</b>				
River Sid	TG/JCB/JB	[Task bar]		
Other rivers to be determined	TG/JCB/JB		[Task bar]	
<b>PC 21+24: Non-compliance Investigations</b>				
Red River (EC Dangerous substances)	TG/PR	[Task bar]		
Venn Stream (EC Freshwater Fish)	RV/PR/MH	[Task bar]		
Other rivers to be determined	RV/PR/MH		[Task bar]	
<b>PC 15: WS plc AMP 2 / PC 14: Deemed Consents/ PC 7: Local Authority Plans</b>	TG/LW/JCB	[Task bar]		
<b>PC 26: Operational projects</b>				
Carron River Assessment/Data archive	RW	[Task bar]		
Wheel Jane monitor report 1992	RW	[Task bar]		
Nancekuke Assessment/Data archive	SW	[Task bar]		
<b>PC 28: Maintain water quality monitors</b>				
River Wolf/Lyd	JB	[Task bar]		
River Wolf/Lyd monitor report 1992	JB	[Task bar]		
River Axe monitor report 1992	JCB	[Task bar]		
West Okement River monitor report 1992	MH	[Task bar]		
River Torridge monitor report 1992	JB	[Task bar]		
Sheepwash monitor report	JB	[Task bar]		
<b>PC 29: Develop water quality monitors</b>				
Penny & Giles Opus Telemetry	RV/MH	[Task bar]		
PHOX 201 V Water Logger	RV/MH		[Task bar]	
PHOX 901 logging development	RV/MH	[Task bar]		

# Freshwater Investigation Team - Work Programme 1993

	April	May	June	July
<b>PC 21 + 24: Non-compliance Investigations</b>				
SWQO's				
River Sid	████████████████████			
Alphin Brook	████████████████████			
Grindle Brook	████████████████████			
Aylesbearre Stream		████████████████████		
River Cranny		████████████████████		
<b>EC Directives</b>				
River Venn	████████████████████			
<b>Catchment Management Plan</b>				
River Torridge / Taw			████████████████████	
River Tamar				████████████████████
<b>PC 24: Impact assessment</b>				
Punchbowl waste disposal site	████████████████████			
<b>PC 15: AMP1/AMP2</b>				
Spreadsheet review	████████████████████	████████████████████	████████████████████	████████████████████
<b>PC 14: Storm sewer overflow project</b>				
<b>PC 26: Operational projects</b>				
Carnon River Assessment/Data archive	████████████████████	████████████████████	████████████████████	████████████████████
Nancekuke Assessment/Data archive	████████████████████	████████████████████	████████████████████	████████████████████
Red River	████████████████████	████████████████████	████████████████████	████████████████████
<b>PC 29: Maintain water quality monitors</b>				
River Wolf/Lyd	████████████████████	████████████████████	████████████████████	████████████████████
River Torridge	████████████████████	████████████████████	████████████████████	████████████████████
Support for G.Hawley (UWWTD)	████████████████████	████████████████████	████████████████████	████████████████████
Support for Pollution Control			████████████████████	████████████████████
<b>PC 29: Develop water quality monitors</b>				
BOD portable monitor	████████████████████	████████████████████	████████████████████	████████████████████
pHOX 201V portable monitor	████████████████████	████████████████████	████████████████████	████████████████████
Autosampler trigger development			████████████████████	████████████████████
Vodafone telemetry	████████████████████	████████████████████	████████████████████	████████████████████
pHOX 900 hand held monitor		████████████████████	████████████████████	████████████████████
Grant YSI monitor training		████████████████████	████████████████████	████████████████████