

WATER QUALITY IN ANGLIAN REGION



THE FIRST 5 YEARS



NRA

*National Rivers Authority
Anglian Region*

WHAT IS THE NRA AND WHAT DOES IT DO?

The National Rivers Authority came into being on 1 September 1989. Our role is to protect the Water Environment in England and Wales.

We have duties and powers for water resources, pollution control, flood defence, fisheries, recreation, conservation and navigation. We operate through a Head Office and 8 Regions.

We aim to improve the quality of rivers, lakes, groundwaters, estuaries, and coastal waters through the control of pollution. We intend that polluters pay the costs of the consequences of their activities.

This leaflet outlines progress in water quality in Anglian Region for our first 5 years.

WHAT'S SPECIAL ABOUT ANGLIAN REGION?

Anglian is the fastest-growing Region. It is mainly low-lying and flat. It has low rainfall and intensive agriculture.

We deal with numbers of developments, abstractions and discharges which are large compared with the rest of England and Wales. The Region faces ever-increasing competition for scarce water resources, and the vital need to protect waters of high quality.

HOW DO WE ACHIEVE OUR AIMS?

We work with local people and all kinds of organisations which represent industry, commerce, farming, Local Authorities, environmental interests and recreation. We strive to promote an awareness of the environment.

We set and enforce proper environmental standards for discharges and we deal promptly with emergencies.

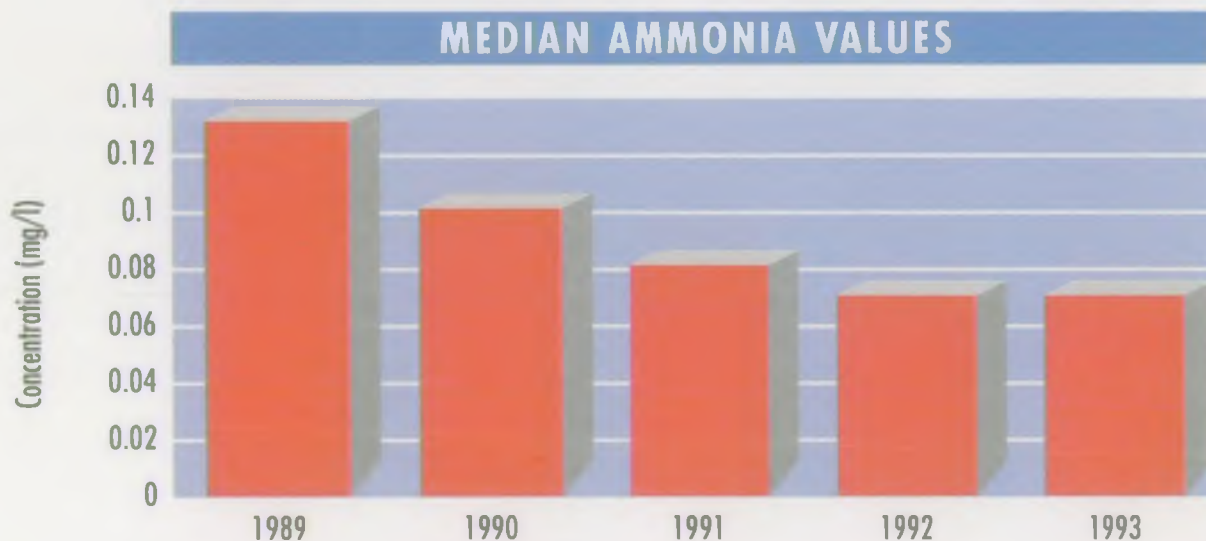
We use Catchment Management Plans to agree with local groups and local people the measures which can be taken to protect and improve water quality over the next 10 years.



Catchment Management Plans

RIVERS

We report river quality by grading rivers according to measurements of pollution. By 1994 there was a 17% improvement since 1989. The amount of ammonia present, a principle indicator of pollution by sewage effluents, has reduced by 50% over that time.

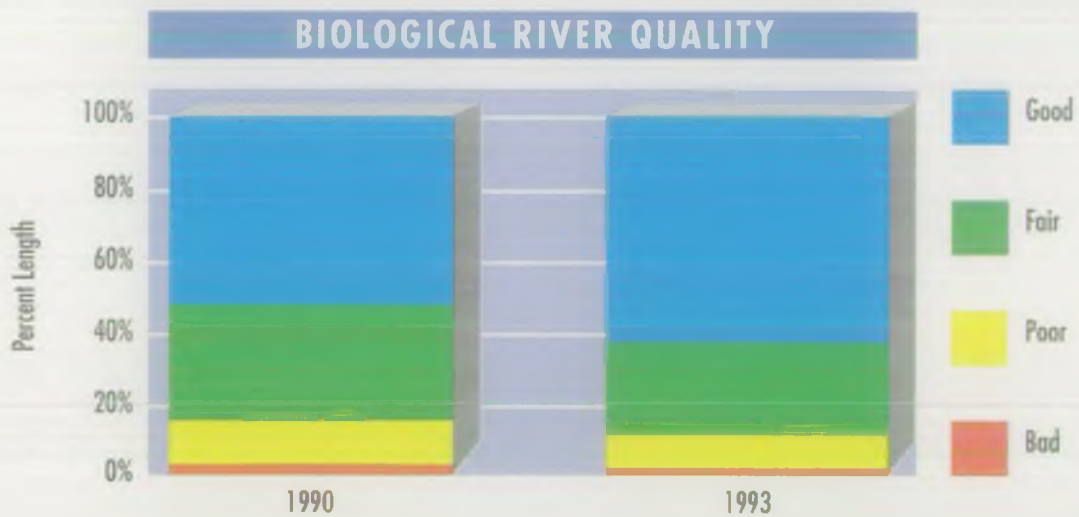


One cause of the improvement is pressure brought to bear on dischargers. This has led to investment in better treatment and improved standards for discharges, especially those from sewage treatment works. Another cause is the wetter weather since the drought of 1990 and 1991. A third contribution is our special work to prevent pollution before it happens.

We also grade river quality according to the types of small creatures we find living in the beds of our rivers. The cleanest rivers tend to have an abundance of creatures which are sensitive to pollution. Since 1989, river quality has improved on this basis also.



Biological Sampling



RIVER QUALITY OBJECTIVES

We have special targets for 7,000 kilometres of our rivers. These are called River Quality Objectives (RQOs). They are sets of water quality standards which will ensure that rivers are suitable for water supplies, fish, agriculture and recreation. Whenever we face a development which threatens water quality, we push for action which protects the RQO.



Fishing on the River Nene

STATUTORY WATER QUALITY OBJECTIVES

Since 1994, it has been possible for these targets to be underwritten by the Secretary of State for the Environment. When issued in this way the targets will be called Statutory Water Quality Objectives (SWQOs).

We use our Catchment Plans to prepare proposals for the Secretary of State for particular targets for particular rivers. The Rivers Cam, Gipping and Stour have been included on a list of candidates from which the Secretary of State will select the first batch of SWQOs.

THE NORFOLK BROADS

Phosphorus is believed to contribute to the loss of pristine water quality in the Broad. We have worked with Anglian Water Services to ensure that phosphorus removal will be installed at nine sewage treatment works.



Windmill on the Broads

In a joint project with the Broads Authority, we are developing new techniques to restore the Broads. We shall try to create clear water conditions by promoting the development of populations of the tiny creatures which graze on algae.

BLUE-GREEN ALGAE

Some species of this type of algae produce toxins which may be dangerous to animals or man. In 1989, sheep and dogs died, apparently after ingesting Blue-green Algae from a green scum at the edge of a reservoir.

We produced advice on the potential dangers of Blue-green Algae and the precautions to be taken by the owners and users of lakes and reservoirs. Sometimes these precautions mean that the water is closed for recreation.



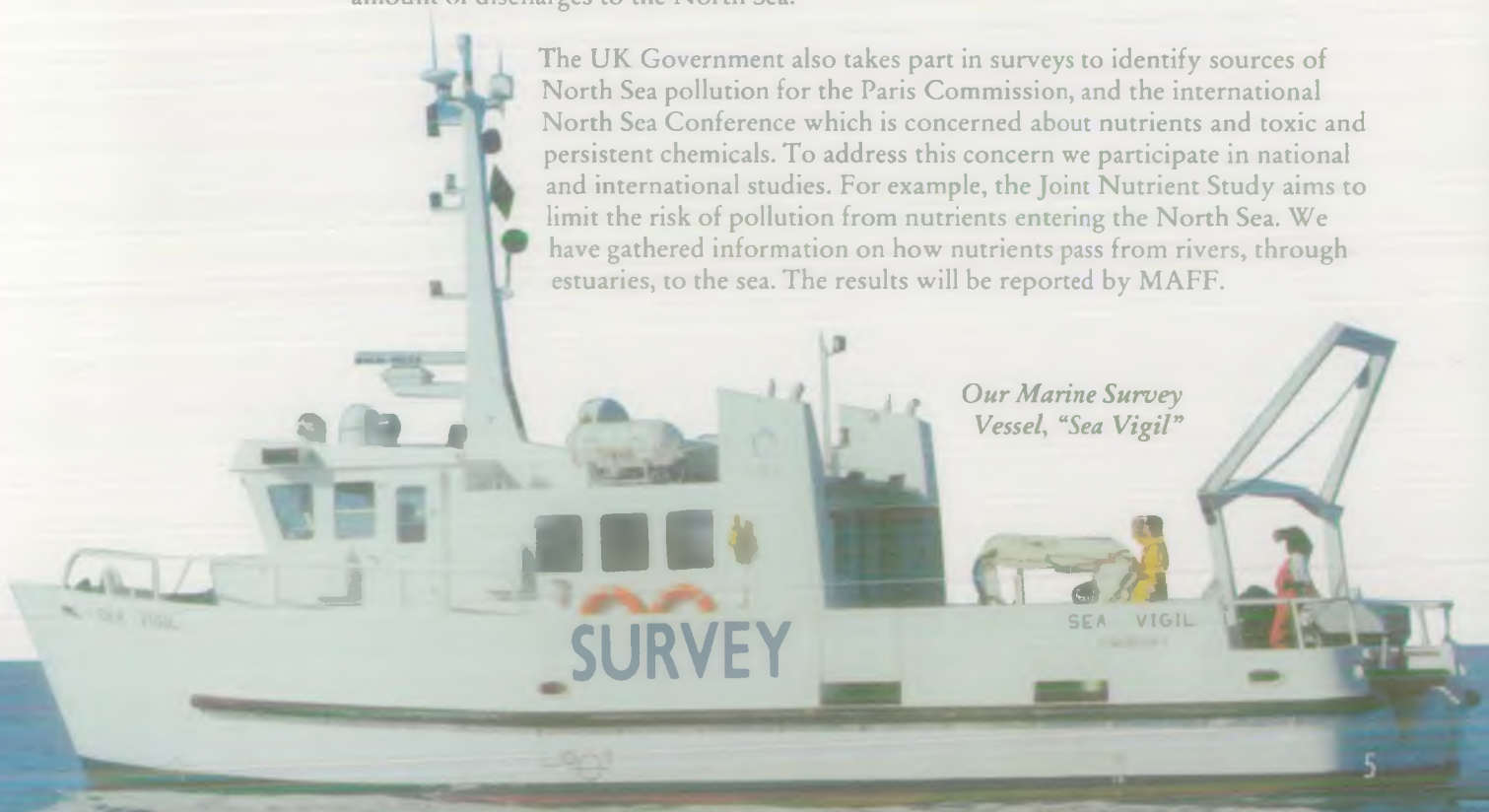
Safety Precautions at Ferry Meadows Country Park

We also researched measures to control the algae and started to plan action for individual waters.

MARINE WATERS

In 1987, the Government agreed to reduce the amount of certain substances discharged to the North Sea to 50% by 1995. Anglian contributes only a small proportion of most of these substances. We are well on the way to deciding the action needed to reduce the amount of discharges to the North Sea.

The UK Government also takes part in surveys to identify sources of North Sea pollution for the Paris Commission, and the international North Sea Conference which is concerned about nutrients and toxic and persistent chemicals. To address this concern we participate in national and international studies. For example, the Joint Nutrient Study aims to limit the risk of pollution from nutrients entering the North Sea. We have gathered information on how nutrients pass from rivers, through estuaries, to the sea. The results will be reported by MAFF.



Our Marine Survey Vessel, "Sea Vigil"

We measure water quality around our coast. Our survey vessel, "Sea Vigil", collects information along a line about 3 miles offshore while an aircraft flies overhead. Images collected by the aircraft are mapped onto the data collected by the vessel. In this way, we determine certain aspects of water quality anywhere within the area of the sea surface covered. The results of the surveys from 1992 have been published in a national report.

Overall, in 1994 we visited 4 times more marine water sites than in 1989.

UNDERGROUND WATERS

More than half of the drinking water supplied (by Water Companies) to the homes and businesses in our Region is taken from underground sources. It is an important issue of public health that these waters receive all possible protection from the risk of pollution. Also, once pollution has occurred, it is very difficult and expensive to remove it and to develop new supplies.

We use our Groundwater Protection Policy to control all developments which could have an impact on groundwaters. We work closely with local Councils to improve polluted waters and to reclaim contaminated land.

In order to be more vigilant, we have increased our monitoring by 20% since 1989.



Chemical Sampling at a Borehole

EUROPEAN DIRECTIVES

We carry out monitoring for 14 Directives, including those on Dangerous Substances, Bathing Waters, Surface Water Abstraction, Freshwater Fisheries and Shellfish Waters. All the results are on our Public Register and details are published in our Annual Reports.

Our results are sent to the Department of the Environment to be forwarded to the European Commission.

The Urban Waste Water Treatment Directive imposes requirements on sewerage systems and sewage treatment. The stringency depends on the size of the discharge and on the type of receiving waters. The directive also requires nutrient control for sensitive waters. Preliminary results of nutrient reduction for the River Nene are very encouraging.

In 1993, 85% of our 33 Bathing Waters complied with the standards, compared with 82%



Bathers at Hunstanton

in 1989. This small change hides a stronger improvement of 21%, in the average levels of pollution. Much of this improvement is due to investment by Anglian Water Services.

NITRATE

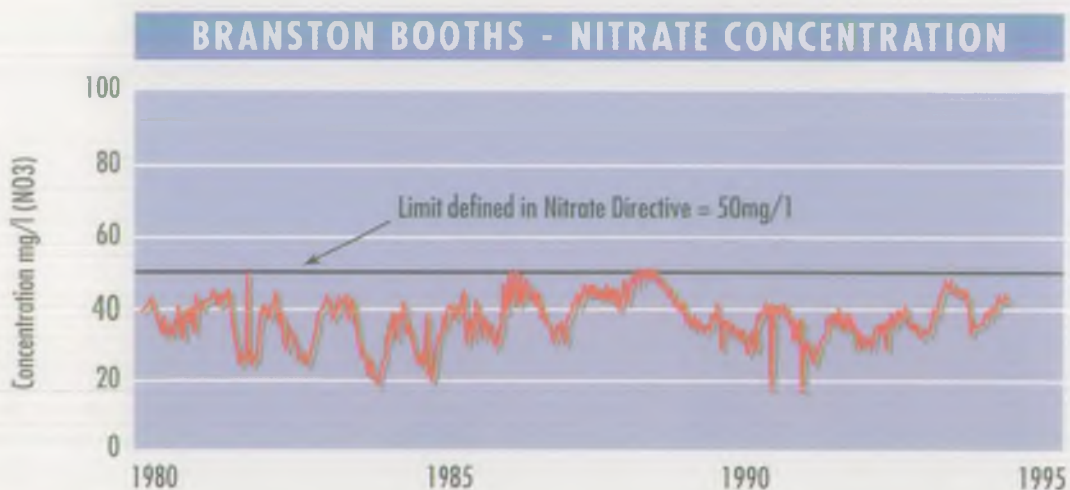
The Nitrate Directive aims to protect waters from pollution from agriculture. We have identified waters with high nitrate. Under the Directive, land draining to these waters can be designated as a Nitrate Vulnerable Zone.

Once Zones are designated, restrictions on agriculture will apply. A Code of Good Agricultural Practice has been introduced. This will aim to reduce nitrate pollution. It will be compulsory within Zones and voluntary elsewhere.



Spray Irrigation of Agricultural Land

We have powers to nominate areas of land where it is desirable to reduce the movement of nitrate into waters. These are designated as Nitrate Sensitive Areas (NSAs). In these we aim to encourage changes in farming, such as converting arable land to grassland. The scheme is voluntary, and compensation is paid to farmers who take part.



In 1990, NSAs were established at Sleaford, and at Branston Booths, near Lincoln. A new batch of five was proposed in 1993.

POLLUTION PREVENTION

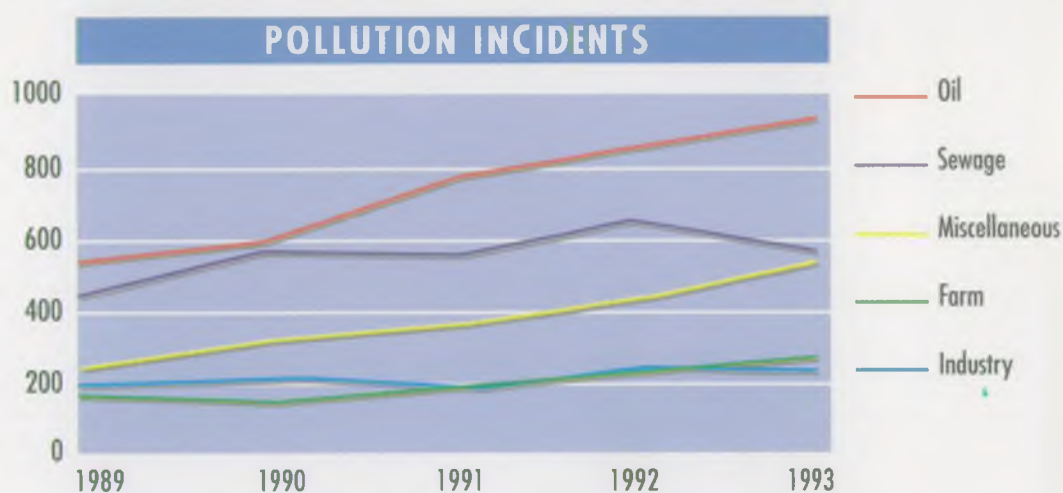
We work with national groups and local organisations on issues like litter, risks from storing and using chemicals and fertilisers, and pollution from accidents and fires.

Each year we inspect 400 farms and industrial sites. This helps us to identify and prevent undesirable discharges, and to assess the risk of accidental pollution.

We have produced guidelines for developers, farms and businesses.

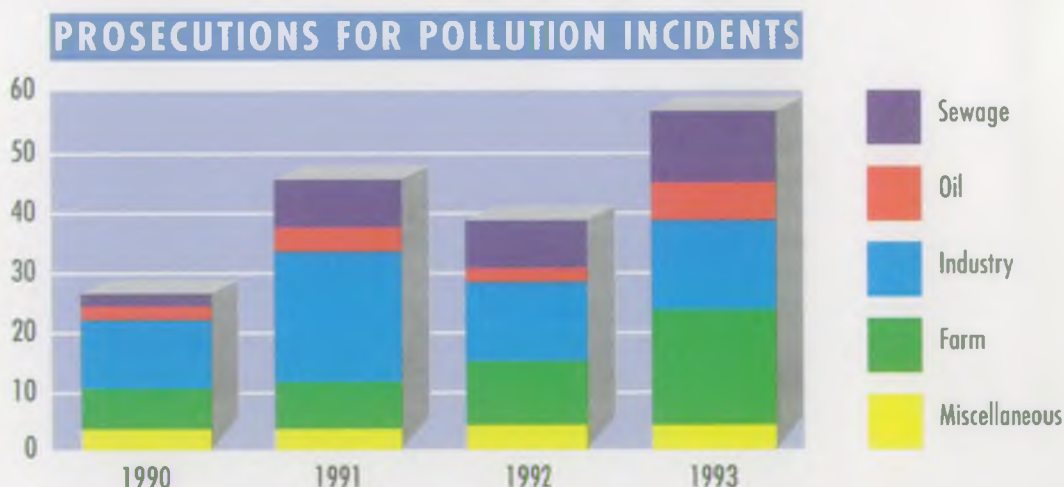
POLLUTION INCIDENTS

The number of incidents reported to us has doubled since 1989. The impact of pollution incidents has reduced as the NRA has become more effective in getting others to prevent pollution. In fact, any decrease in the numbers is being countered by the fact that more people have become more aware of pollution and the need to alert the NRA. This is reflected in the greater numbers of minor incidents in recent years and a reduction in the number of serious incidents.



PROSECUTION

We seek to prosecute wherever serious pollution has occurred, or wherever negligence or deliberate act is involved, and where evidence can be accumulated to mount a successful case. The number of prosecutions has tripled since 1989.



PESTICIDES

Our National Strategy will recommend action to help minimise the risk of pollution. Our approach is to promote correct ways to store, use and dispose of pesticides, through liaison with industry and government, and at agricultural shows.

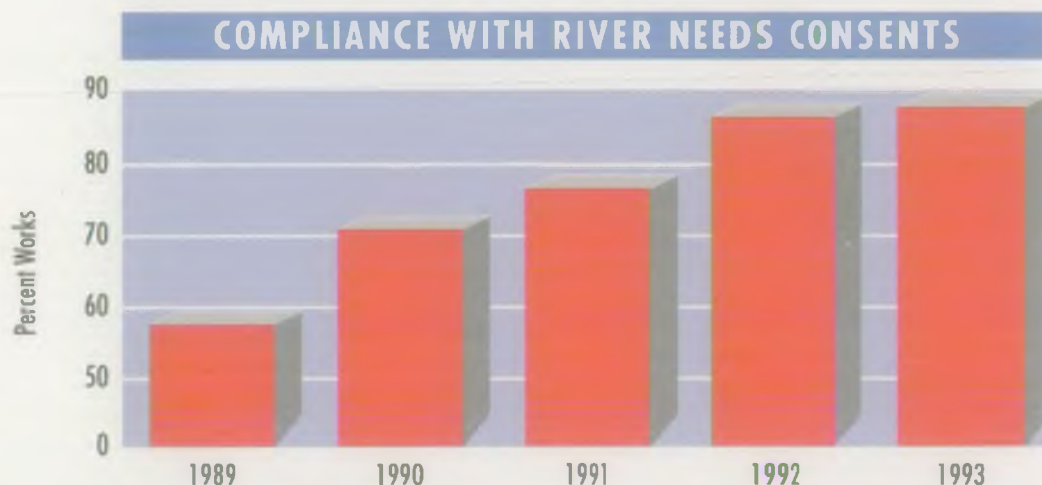
Every year we analyse samples for over 100 pesticides and obtain 40,000 results.

DISCHARGES

The discharge of wastewaters is controlled by granting a Consent. This is the legal permission to discharge an effluent to rivers or other waters.

We have seen big improvements in the performance of sewage treatment works operated by Anglian Water Services. More than 98% of the discharges comply with their Consents, compared to 89% in 1989. Sewage treatment works in this Region have, on average, the tightest standards in the United Kingdom.

The River Needs Consent is a working estimate of the Consent which may be needed in the future to achieve our targets for the Environment. Since 1989 the number of discharges which comply has risen from 57% to 90%.



FUTURE INVESTMENT

By 1994, we had calculated the further action needed to meet our targets for 7,000 kilometres of river, and negotiated plans and priorities for investment by dischargers. We have secured £42m for investment by Anglian Water Services. This will improve river and estuary water quality, beyond that driven by statutory requirements, over the period from 1995 to 2000.



Flag Fen Sewage Treatment Works

INTEGRATED POLLUTION CONTROL

Integrated Pollution Control (IPC) was introduced in 1991 under the Environmental Protection Act 1990. The aim is to control all industrial processes that have the biggest potential to pollute air, land or water. IPC is administered by Her Majesty's Inspectorate of Pollution.

We have contributed to over 130 sets of IPC control strategies. More than £100m of investment by industry, in improvement programmes has been secured.

MONITORING

Monitoring is a complex process. 50,000 sites are sampled and 500,000 analytical results are generated and reported each year.

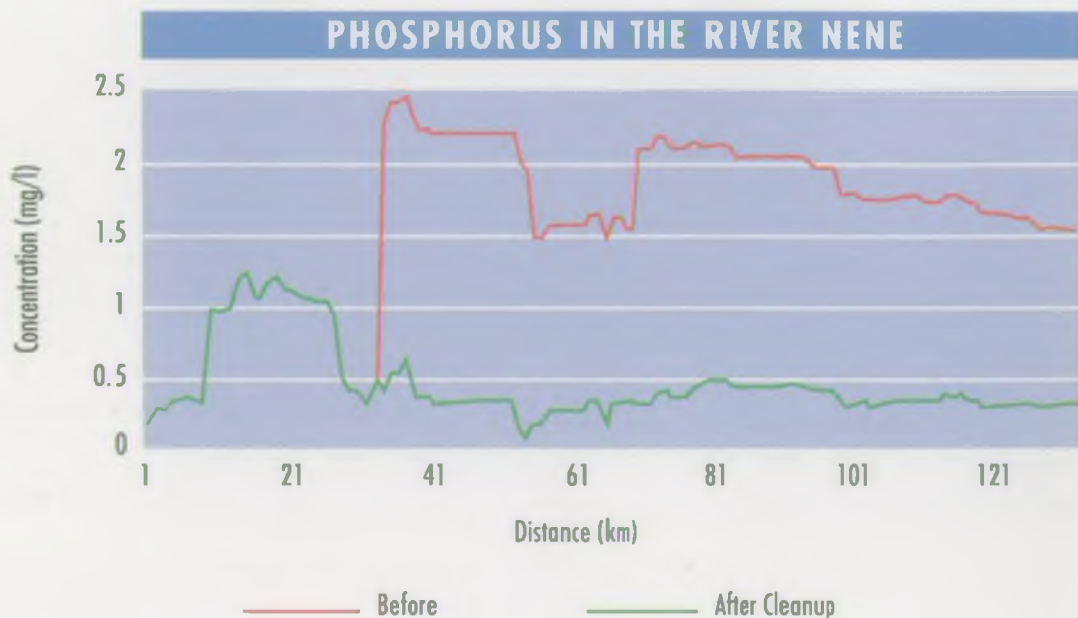
We use computers to co-ordinate sampling and store and display our results. We can display the location of sampling points, discharges, and data over a background map. In this copy of a computer screen, discharges near Wells are shown as small red circles.



MATHEMATICAL MODELLING

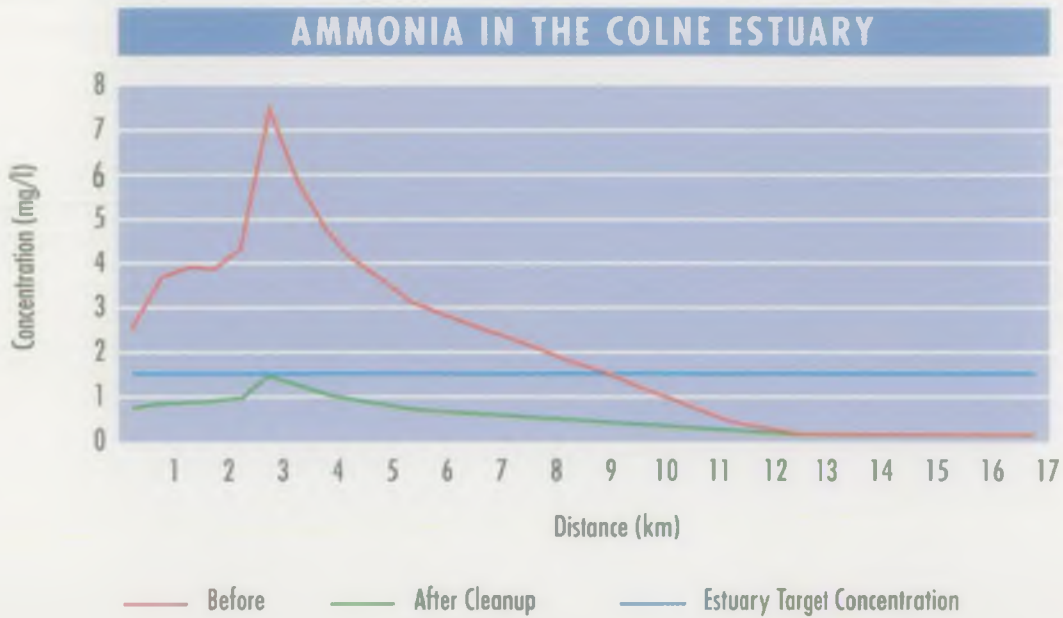
We use mathematical models to predict water quality. The models help us to calculate the measures needed to achieve our targets for water quality. SIMCAT is our river quality model. It describes the quality of river water throughout a catchment.

In this example, SIMCAT predicts the impact of phosphorous removal from sewage effluents, discharged to the River Nene, on concentrations of phosphorous in the river.



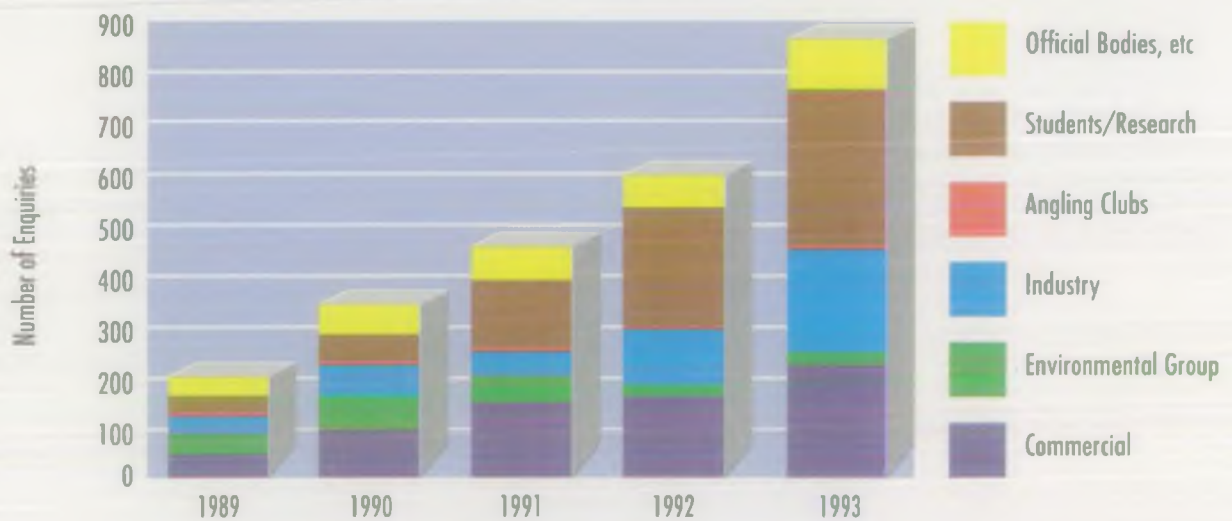
We have models for all of our Bathing Waters and big estuaries.

In this example, the Colne Estuary Model has been used to set consent conditions for discharges to the estuary, so that the estuary target concentration for ammonia will be met.



THE PUBLIC REGISTER

The Register, which is open to visitors every working day, holds copies of the standards applied to discharges and the results of analyses of environmental and effluent samples. The number of enquiries has tripled since 1989.



WHO PAYS FOR OUR WORK ON WATER QUALITY?

About 46% of our expenditure is raised from charges levied on dischargers. The rest is mostly provided as a Government Grant. The split reflects the impact of discharges and the work done by the NRA on other types of pollution and for the Government, and our important duty to monitor environmental waters in the public interest.

The National Rivers Authority

Guardians of the Water Environment

The National Rivers Authority is responsible for a wide range of regulatory and statutory duties connected with the water environment.

Created in 1989 under the Water Act it comprises a national policy body coordinating the activities of 8 regional groups.

The main functions of the NRA are:

- Water resources — The planning of resources to meet the water needs of the country; licensing companies, organisations and individuals to abstract water; and monitoring the licences.
- Environmental quality and Pollution Control — maintaining and improving water quality in rivers, estuaries and coastal seas; granting consents for discharges to the water environment; monitoring water quality; pollution control.
- Flood defence — the general supervision of flood defences; the carrying out of works on main rivers; sea defences.
- Fisheries — the maintenance, improvement and development of fisheries in inland waters including licensing, re-stocking and enforcement functions.
- Conservation — furthering the conservation of the water environment and protecting its amenity.
- Navigation and Recreation — navigation responsibilities in three regions — Anglian, Southern and Thames and the provision and maintenance of recreational facilities on rivers and waters under its control.



ENVIRONMENT AGENCY

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