DISCHARGE CONSENTS

MONITORING AND COMPLIANCE IN 1994

National Rivers Authority

SUMMARY

The National Rivers Authority is a public body whose job is to protect the Water Environment. Our aim is to improve the quality of waters by controlling the risk of pollution.

We set the standards, or Consents, that are required for discharges of wastewater. We can prosecute dischargers who fail to meet these standards.

We report here on our monitoring of discharges and we summarise the performance of discharges. We give details for different parts of England and Wales, and we describe our efforts to prosecute offenders.

Thirty percent of Consented Discharges are important enough to require Numeric Conditions on the amount of pollution in the effluent. Most of these discharges are made either by the Water Companies or by Industry.

Seventy percent of Consented Discharges are controlled by Descriptive Conditions. These may state the type of equipment which must be deployed to control the quality of the discharge, and may specify the impacts on the Environment that must be prevented.

For the discharges from sewage treatment works operated by the Water Companies:

- Over 4000 have Consents with Numeric Standards. We took samples of 94% of these and 96% of the sampled discharges complied with all the conditions in their Consents. The compliance was 94% in 1993.

- About 1850 are small enough to warrant Descriptive Conditions. We inspected 90% of these and 87% of the inspected discharges complied. Last year these figures were 71 and 88%, respectively.

For discharges made by Industry:

- About 5500 have Consents with Numeric Standards, and are classified as Significant Discharges because of their size. We took samples of 65% of these and 69% of the sampled discharges complied with their Consents. Last year these figures were 62 and 71%, respectively.

We explain why the number of prosecutions will always be a small proportion of the number of discharges reported to have failed their Consents on the basis of our routine monitoring. We took 20 prosecutions for violation of of Consent in 1994.

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1 INTRODUCTION

A Consent is a legal document that sanctions the discharge of effluent. It states the amount of wastewater that can be discharged, and may set limits on the composition of the wastewater.

There are approximately 110,000 discharges that have Consents. This total covers a great variety of effluents and dischargers. This report gives the numbers of discharges of various types, and discusses how the discharges are monitored. It also describes the performance of discharges against their Consents.

We face a dilemma because to make fair comparisons of performance, we ought to apply similar monitoring to all discharges. On the other hand, the practical implementation of our duty to monitor pollution means that we concentrate our effort on those discharges that could pose the biggest threats. This can produce a different emphasis across England and Wales, and can result in misleading comparisons.

Similarly, to compare types of discharger, we should apply similar Consents to all discharges and use the same definition of compliance. But we have to face the fact that different types of discharge have different standards applied, and these may be subject to different legal definitions of compliance. This too can produce misleading comparisons.

Over the years, the NRA and its predecessors have seen waves of complex changes in the ways Consents are set and used. The legacy of these is still with us. Some features of Consents may seem more strict in certain parts of England and Wales. This may reflect past levels of investment, or differences in past Environmental needs.

Most discharges are small and innocuous. These need not be monitored directly because they have very little potential to cause pollution. The impact of groups of these small discharges is assessed by checking the quality of the receiving waters. When we detect pollution, we start to monitor the potential culprits in order to find the cause of the pollution, and to decide the action.

Most of our monitoring is directed at discharges that have the greatest potential for impact. In the main, these discharges are made by the Water Companies, or by Industry.

Our published report, *Discharge Consents and Compliance* (Water Quality Series No. 17), provided a review for the years from 1990 to 1992. One of our tasks is to try to deal with the legacy of the enormous diversity of historic practice in reporting data. Consequently, in 1993, we adopted new ways of reporting and classifying discharges with the aim of generating summary statistics that are more useful and consistent. A report *"Discharge Consents: Monitoring and Compliance in 1993"* was produced and can be made available to the public on request. This (the 1994) report is the second to follow the new approach.

In order to set down facts that can be properly used in the future, we must make occasional use of technical terms. We have provided a Glossary of these. Terms defined in the Glossary are indicated in the main text and in the Tables by capital letters as in: Descriptive Consent, Combined Sewer Overflow, or Process Effluent.

2 TYPES OF DISCHARGES

Consents cannot be applied to all discharges. Discharges from abandoned mines, for instance, may cause pollution, but they are outside the scope of our powers to control by Consent.

This report deals only with discharges from fixed points, such as the end of a pipe. These discharges are called Point Source Discharges. It is only these discharges that can be controlled by Consent. In this report, the term, *Discharge*, means *Point Source Discharges*.

We differentiate between the Discharges operated by the Water Companies[1] and those operated by all other bodies. This is because these groups have different types of standards in their Consents. For example, most standards for discharges from sewage treatment works owned by the Water companies are 95-percentiles (standards that must be met for 95% of the time), whereas in other discharges, the 95-percentile is hardly ever used.

Discharges made by Industry, Trades and Commerce are given the collective name, Trade Discharges. Whilst some trade effluents are discharged to sewer (and their control is therefore the responsibility of a Water Company), the NRA is responsible only for the Consents for Trade Discharges where such discharges are made directly to receiving waters (including, of course, discharges made by Water Companies from sewers and sewage treatment works).

In this report, all references to Trade Discharges, cover only those discharges that enter

[1] *By this we mean the ten private Water Services Public limited companies set up in 1989.*

a water directly.

Definitions of types of discharge within the broad categories discussed above are given in the Glossary. The numbers of discharges within such sub-divisions are given in Tables.

3 TYPES OF CONSENTS

About 110,000 discharges have consents. The approximate number of consents which have been granted for particular types of discharge is set out in Table 1.

Table 1: Number of Consents in England and Wales

Type of Discharge	Number
Sewage	9300
Water Companies: Sewage Treatment Works	6200
Other Dischargers: Sewage Treatment Works	3100
Trade	5500
Other Discharges- (minor trade and sewage discharges, intermittent sewage discharges and others)	95000
Total	110000

Consents fall into one of three types: Numeric, Non-numeric and Descriptive. As indicated above, Discharges that have the biggest potential to affect the environment have Numeric Consents.

Non-numeric Consents are used where the controls required of the Discharge are not easily or usefully defined by a numerical standard on effluent quality. Such Consents are usually set for overflows to waters from sewers that also receive the rainfall that runs off from land (Combined Sewer Overflows). The Consent will set the conditions under which a discharge to water is permitted.

As indicated above, Descriptive Consents are normally restricted to small discharges. Descriptive Conditions may also be included within Numeric Consents. For example, a Numeric Consent may include a clause stating that the discharge must not harm fish.

4 CONSENTED DISCHARGES AND MONITORING

The frequency of sampling of a discharge reflects its potential impact for which the volume of the discharge is used as a broad proxy. For sewage treatment works this is expressed in terms of the population which can be said to be served by the works; for other discharges it is expressed in terms of volume per day. Table 2 provides an overview of sampling arrangements. All the results of monitoring of discharges and receiving waters are held on Public Registers which are available for inspection at our Regional Offices.

Significant Discharges

For operational purposes, we have defined a category of Significant discharges which comprises about 14,000 point source discharges. These will generally discharge a volume greater than 5m^3 per day (although in some cases, whilst the volume of the discharge may be smaller, its type and location may have been sufficiently important to justify inclusion in this category). About 3,000 Significant discharges fall into this latter category. All Significant discharges are sampled directly.

Whilst all Significant Discharges have numeric consents, many other discharges with numeric consents are not generally sampled directly even though the likely content of the waste water discharged has been determined. Instead the quality of the receiving waters is monitored.

The sampling rate may be larger than indicated in Table 2 where we believe the receiving water is particularly sensitive to a discharge or how that discharge is managed. For example, the Significant Discharges include about 3000 discharges whose size is less than the cut-off point of 5 cubic metres per day given in Table 2.

Table 2: Frequency of Sampling		
Sewage Treatment Works with Numeric Consent (Equivalent Population)	Other Discharges Consented Flow (cubic metres per day)	Number of Samples per Year
less than 20	less than 5	none
20 to 250	5 to 100	4
250 to 20000	100 to 10000	12
20000 to 100000	10000 to 50000	24
more than 100000	more than 50000	48

Numeric Consents

Numeric Consents applied to about 28,000 discharges (out of the total of Consented Discharges of 110,000) of which about 14,800 are Significant Discharges.

Of the Significant Discharges, we sampled 94% of the 4325 sewage treatment works operated by water companies, 60% of the 4,000 other sewage works and 69% of the 5220 Trade Discharges.

Non-numeric and Descriptive Consents

A Discharge that has a Descriptive Consent is inspected at a frequency commensurate with its potential to affect the environment. As a rule this is, at most, quarterly. We rely on the biological monitoring of receiving waters to support the inspections of the Discharges, and to point to any Discharges which need to be inspected more often.

About 74.5% of Consented Discharges have Non-numeric or Descriptive Consents. Of these, about half are sewage works not operated by the Water Companies. There were 1847 Discharges with Descriptive Consents from sewage treatment works operated by the Water Companies. We inspected 89% of these.

5 COMPLIANCE

Numeric Consents

Table 3 summarises compliance of the main types of Discharges that are monitored and have Numeric Consents. Of all discharges with Numeric Consents that were monitored, 75.9% complied with their Consents. In 1993 this figure was 75.1%. Appendix B gives details for Regions.

The figures on compliance are a good summary of the performance in 1994 but not such a good basis for showing change from year to year. Neither are they a good basis for comparing types of discharger. This is because the figures include performance against Absolute Limits and compliance with these standards is a function of sampling effort - the more sampling the larger the number of failed Discharges.

Table 3: Compliance with Numeric Consents

Category	Total Number	Number Monitored	Compliant Discharges (% of Monitored)
All Discharges with Numeric Consents	12975	10040	75.9
Sewage Treatment Works operated by the Water Companies	4325	4054	95.6
Sewage Treatment Works not operated by the Water Companies	3130	2392	52.8
Trade Discharges	5520	3594	69.0

Table 3 also indicates that the performance of the sewage treatment works operated by the Water Companies is much better than that of other discharges and other types of discharger. Appendix A explains that the methods of assessing compliance have to differ for different types of discharger. Nonetheless, when account is taken of these differences, the performance of the sewage treatment works operated by the Water Companies, remains better than that of other types of discharger.

Table 4 further illustrates the performance of sewage treatment works operated by the Water Companies. This table covers only the 95-percentile standards - standards well placed to provide useful summary statistics because compliance is not so sensitive either to differences in sampling rates, or to the number of discharges that have Upper-tier Consents.

Table 4: Compliance with 95-Percentile Standards of Sewage Treatment Works Operated by the Water Companies

Region	Total Number	Number Monitored	% of Monitored that Comply
Anglian	689	687	97.8
North West	355	355	98.0
Northumbria & Yorkshire	634	486	95.5
Severn Trent	775	746	99.9
South Western	512	507	91.7
Southern	282	275	98.8
Thames	368	368	95.9
Welsh	710	630	97.2
England and Wales	4325	4054	97.0

Table 4 shows that 97.0% of discharges comply with their 95-Percentile (look-up table) Standards. The figure was 95.5% in 1993.

In theory, a result of 97% is compatible with a true position in which all discharges comply with all their 95-percentile standards. This is because the use of sampling to assess compliance produces an unavoidable risk of up to 5% that a compliant discharge will be reported wrongly to have failed.

Descriptive Consents

Table 5 deals with all the Discharges with Descriptive Consents. Appendix B gives further details for Regions.

Table 5: Compliance with Descriptive Consents				
Category	Number of Significant Discharges	Number Monitored	Compliant Discharges	
			Number	% of Monitored
All Significant Discharges with Descriptive Consents	3082	2091	1821	87.1
Sewage Treatment Works operated by the Water Companies	1847	1658	1447	87.3
Other Discharges	1235	433	374	86.4

Changes Since 1990

To assess true changes in discharge quality, we really need to compare past data on discharge quality with a fixed set of Consent Conditions, say, those in force in December 1994. It would also be useful to look at changes in the loads of pollution discharged since 1990. It has not yet been possible to assemble these data on a national basis. Thus, the compliance statistics simply reflect those standards in force at the relevant period.

The compliance statistics show only the change in the legal position. Because Consents change as new standards are introduced, it is possible, even likely, that the legal position may worsen whilst discharge quality improves.

In 1993 the NRA introduced a more tightly defined reporting standard for the assessment of compliance. It has not been possible to assess the compliance reported in earlier years against the new standard, and this change in reporting has been responsible for the appearance of a small reduction in performance from 1992 to 1993.

The position for sewage treatment works operated by the Water Companies is shown in Table 6. The improved compliance seen from 1990 to 1992 has been maintained and performance improved from 1993 to 1994. This modest success masks a big reduction in the amount of pollution actually discharged and this has contributed to recent improvements of 26% in river water quality[2].

[2] *National Rivers Authority. Annual Report and Accounts. 1994/5*

Figures like those in Table 6 are sensitive to the numbers of discharges that have Upper-tier Consents. And compliance against Upper-tier Consents depends on the sampling rate - the more samples, the greater the number of failed discharges.

Figures for compliance against 95-percentile standards provide a better indication of trends in performance. These improved overall from 95.5 to 97% from 1993 to 1994.

Table 6: Compliance with Numeric Consents of Sewage Treatment Works Operated by the Water Companies

Region	% of Monitored that Comply				
	1990	1991	1992	1993	1994
Anglian	88	92	98	96.1	96.9
North West	96	97	98	97.2	97.5
Northumbria & Yorkshire	95	95	95	95.3	95.5
Severn Trent	91	98	98	96.4	98.9
South Western	87	87	85	84.4	89.0
Southern	88	94	99	97.7	98.9
Thames	92	94	95	95.1	95.1
Welsh	87	95	96	93.1	93.7
England and Wales	90	94	95	94.2	95.6

Similar figures are given for Trade Discharges in Table 7. There is an apparent improvement in some Regions and an apparent decline in others. This may reflect changes in the numbers of discharges that are monitored.

Table 7: Compliance with Numeric Consents of Trade Discharges					
Region	% of Monitored that Comply				
	1990	1991	1992	1993	1994
Anglian	35	41	41	59	66
North West	77	75	71	74	75
Northumbria & Yorkshire	62	66	69	84	76
Severn Trent	67	74	72	72	77
South Western	83	54	53	61	41
Southern	53	41	42	48	42
Thames	70	72	73	76	72
Welsh	37	43	41	50	56
England and Wales	74	67	67	71	69

6 ENFORCEMENT

We use the results of our routine monitoring to assess whether limits are met. If failure occurs, we issue warning to the discharger concerned. If failure continues despite the warning and it becomes necessary to initiate legal action in the courts, we must (for the results of the analysis to be admissable as evidence) split each sample into three equal parts. One part is analysed by us, the second is given formally to the discharger and the third is held as a control. This is known as Tri-partite Sampling.

These procedures reduce the risk of prosecuting compliant discharges that have been reported wrongly as failures by routine monitoring (an issue that we discuss later), or by results affected by the statistical errors in chemical analysis.

A failure of Consent that is so bad as to cause a pollution incident like a fish kill or a complaint is handled by special procedures and policy. These are described elsewhere[3]. Our response to other failures is to treat them as evidence of heightened risk of damage to the Environment, as set out below.

[3] *Water Pollution Incidents in England and Wales - 1994. NRA Water Quality Series. No. 25. July 1995.*

Absolute Limits and Upper-tiers

Whenever a routine sample indicates a clear breach of Consent (in other words - supportable within the errors of chemical analysis) the next sample will be Tri-partite. If this sample shows a clear breach, prosecution will normally follow. Routine Tri-partite Sampling will continue until we are satisfied that the discharge complies. This will usually be when all the samples taken over three months comply.

95-percentile Standards

Whenever any consecutive 12 months of routine sampling indicates a breach of Consent all subsequent routine samples will be Tri-partite. This will continue until:

sufficient data have been collected for a prosecution; or,

a set of results for the immediate past 12 months complies.

7 PROSECUTIONS

The number of prosecutions is much lower than the number of failures detected by routine monitoring. One reason for this is that, on learning that a discharge has been subject to Tri-partite Sampling, most dischargers will take action to improve the quality of the discharge. This corrects the problem, whilst making it unlikely that a case can be made for prosecution.

Even if dischargers paid no heed to the arrival of Tri-partite Sampling, we might often find that, for reasons of chance, an initial failure of routine samples was not followed by similar failures in subsequent samples.

The reported number of failures includes both marginal and substantial failures. We do not normally prosecute in circumstances of single sample failure where the failure small and within the possible error associated with chemical analysis.

Marginal failures are useful in drawing attention to the potential for more serious events and we are increasingly issuing warning letters for marginal failures. These warnings are an appropriate alternative to court action[4] in such cases.

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[4] *Water Pollution Incidents in England and Wales - 1994. NRA Water Quality Series. No. 25. July 1995.*

At the aggregate level, our data give precise estimates of the number of failures in Regions or in England and Wales. These are good estimates of performance. However the same degree of precision cannot be achieved in identifying failures of Consents at individual discharges. It is inherent in the statistical process of using data to decide compliance, that some marginal failing discharges will escape detection, and that some compliant discharges will be treated as failures. As discussed above, this is reflected in our policy on enforcement.

The result is that the numbers of prosecutions will be small compared with the number of failures inferred from summary statistics. About 95% of prosecutions are successful.

The data set out below represents prosecutions for breach of consent which occurred during the calendar year 1994. The data refers to prosecutions which had taken place by September 1995.

Table 8:Prosecutions for breaches of consent during 1994+

Region:	Number:
Anglian Region	1
Southern Region	0
North West Region	8
Northumbria and Yorkshire Region	0
Thames Region	1
South Western Region	5
Welsh Region	10
Severn Trent	0

+ prosecutions which were undertaken by September 1995

GLOSSARY

ABSOLUTE LIMIT: A numerical standard that must never be exceeded. The term is usually applied to all determinands in the Consents for discharges not operated by the Water Companies and to the Non-sanitary Determinands for the sewage treatment works operated by the Water Companies. Sanitary Determinands for the sewage treatment works operated by the Water Companies are controlled by Percentile Standards although Absolute Limits (as Upper-tier Limits) may also be applied with the Percentiles .

AMMONIA: A chemical found in water often as a result of pollution by sewage effluents. Ammonia affects fisheries and abstractions for potable water supply.

BIOCHEMICAL OXYGEN DEMAND (BOD): A measure of the amount of oxygen consumed in water, usually by Organic Pollution. Oxygen is vital for life and so measurement of the BOD tests whether pollution could affect aquatic animals.

COMBINED SEWER OVERFLOWS: Most sewers receive flows of sewage and flows of rainfall that run off our roads and paved areas. After heavy rainfall, the flows in the sewer may exceed the capacity of the sewers or the capacity of sewage treatment works. Combined Sewer Overflows allow the dilute and excess flow to discharge to a receiving water. The conditions under which flows may overflow into receiving waters are specified in the Consent.

CONTROLLED WATER: Waters for which the NRA is responsible: including all rivers, canals, lakes, groundwaters, estuaries and coastal waters to a distance of 3 miles offshore.

DESCRIPTIVE CONSENT: A Consent describing qualitatively the type of treatment required, or polluting effects to be avoided, rather than a set of numerical limits on the quality of the discharge. It is normally used for small sewage works.

DETERMINAND: A general name for a characteristic or aspect of water quality. Usually a feature which can be described numerically as a result of scientific measurement.

EMERGENCY OVERFLOWS: The sewerage system contains items like pumping stations which could sometimes be subject to an emergency such as mechanical failure. The conditions under which flows may be diverted into receiving waters are controlled by Consent.

ENVIRONMENTAL QUALITY STANDARD: A summary statistic, like a mean, percentile or maximum, that specifies the concentration of a Determinand in a receiving water that should not be exceeded if a specified use or attribute of that water is to be maintained.

EQUIVALENT POPULATION: A measure of the load of Organic Pollution. It is an estimate of the population served by the sewage treatment works plus an allowance for trade discharges to the sewer. The latter is expressed in terms of the number of extra people that would produce a load of pollution that is equivalent to the trade discharge.

INTERMITTENT DISCHARGES: Discharges of sewage that are made intermittently as a result of rainfall, (Combined Sewer Overflow, Storm Tank discharge), or following an emergency such as power failure at a sewage pumping station.

INSPECTED DISCHARGES: Discharges, usually with Descriptive Consents, that are subject to pre-planned visits to assess compliance. The inspections may include checks on the receiving water.

LOOK-UP TABLE: The Look-up Table is the procedure used since 1985 in England and Wales, for assessing compliance with 95-percentile standards in the Consents of discharges from sewage treatment works operated by the Water Companies. The Look-up Table is a list, for various sampling rates, of the maximum number of exceedences allowed in a period of 12 months. A truncated version is shown below

The Look-up Table	
Number of Samples	Permitted Number of Failed Samples
4 - 7	1
8 - 16	2
17 - 28	3
29 - 40	4
41 - 53	5
	etc

MONITORED DISCHARGE: A Monitored Discharge is subject to routine Inspection or sampling of the receiving water or the discharge itself.

NON-NUMERIC CONSENT: A Consent that has no numeric limit on discharge quality, but relies on specification of a numeric process variable, such as flow, in order to achieve the required degree of environmental protection. This type of Consent is normally used for Combined Sewer Overflows and Emergency Overflows.

NON-SANITARY DETERMINANDS: Determinands which are not generally associated with sewage treatment. They include nutrients as well as metals and other Dangerous Substances. Consent Standards are almost always expressed as Absolute Limits. In many cases, Non-sanitary Determinands in sewage effluents are the result of trade discharges to the sewer.

NON-WATER COMPANY DISCHARGES: All Point Source Discharges not made by the Water Companies. The discharges made by all other traders and private individuals. Most of these discharges are made from small sewage works and small Trade premises and these tend to have Descriptive Consents.

NUMERIC CONSENT: A Consent in which numeric criteria are set (as absolute limits or percentiles), on the quality, concentration or load of any substance, and on the discharge flow.

ORGANIC POLLUTION: A term used to describe the type of pollution which through the action of bacteria consumes the oxygen dissolved in rivers. It applies to the effects of sewage, treated sewage effluents, farm wastes and the waste from many types of industry like dairies, breweries and abattoirs.

PERCENTILE LIMIT: A numeric limit that must be achieved or bettered for at least some stated percentage of time over a specified assessment period. For example, a 95-percentile limit must be met for at least 95% of a specified time period, for example, 1 year (see Look-up Table).

POINT SOURCE DISCHARGE: Discharges from a fixed point - a pipe, for example. It is these discharges that can be controlled by Consent.

PROCESS EFFLUENT: Types of Trade Discharge. The liquid waste from industrial and commercial processes as distinct from the drainage from sites.

PUBLIC REGISTERS: Records of Consents and analysis of effluents and waters that are available for inspection by any member of the public. The Registers are located at the NRA's Regional Offices.

RECEIVING WATER: Water to which effluents discharge. This covers all Controlled Waters : rivers, canals, lakes, groundwaters, estuaries and coastal waters to a distance of 3 miles offshore.

SANITARY DETERMINANDS: The pollutants commonly associated with sewage treatment. These are Suspended Solids, Biochemical Oxygen Demand (BOD) and Ammonia.

SEPTIC TANKS: Septic tanks are small sewage treatment facilities which normally serve individual domestic premises.

SIGNIFICANT DISCHARGES: The term "significant" is applied to Point Source Discharges that are Consented for more than 5 cubic metres of volume per day, but also includes some smaller discharges where the type of discharge and location of the discharge make it important enough to require Monitoring. They are subject to Numeric Consents.

SITE DRAINAGE: Drainage from sites used for industrial, commercial or domestic purposes. This may be collected in surface water sewers or drains that discharge to a receiving water.

STORM SEWAGE: The high flows of sewage that can reach the sewerage system or the sewage treatment works at times of heavy rainfall.

STORM TANKS: Sewage treatment works are designed to treat a specific flow of sewage. High flows in excess of this level, caused usually by storms, are passed into Storm Tanks. The aim is to pass the stored volumes to the sewage treatment works when the flows have receded.

STORM TANK OVERFLOWS: If the Storm Tanks are not big enough to take all the Storm Sewage, perhaps because the storm is particularly severe, the surplus flow may spill over into a receiving water. The conditions under which this can happen are specified in the Consent. Storm tank discharges consist of dilute sewage, after some settlement of suspended, potentially polluting, material.

SURFACE WATER DISCHARGES: In this report, the run-off from roads, buildings and land. This may be subject to Consent where it enters watercourses. (Not to be confused with the term Surface Water which is sometimes used for any Controlled Water which is not groundwater.)

SUSPENDED SOLIDS: Solid organic or inorganic material maintained in suspension by the turbulence of effluent or receiving water flow. These solids may settle when the flow velocity drops, possibly smothering bottom dwelling aquatic organisms or creating a localised oxygen demand.

TRI-PARTITE SAMPLE: A sample taken in the prescence of a witness and split into three parts. One part is analysed by the NRA, one is given formally to the discharger and one is kept aside to allow an inependent check. This type of sample is generally the only type of official or regulatory sample formally admissable as legal evidence.

UPPER-TIER CONSENT: An Absolute Limit generally a multiple of the 95-Percentile Limit, that may be included with the 95-percentile in the Numeric Consents for sewage treatment works operated by the Water Companies.

WATER COMPANY DISCHARGES: Point Source Discharges made by the ten Water Service Public Limited Companies, (Water and Sewerage Undertakers), in England and Wales.

APPENDIX A: ASSESSMENT OF COMPLIANCE

We report a discharge as compliant when our monitoring programme shows that it conforms fully with the limits set in its Consent.

Discharges from Sewage Treatment Works Operated by the Water Companies

Numeric Consents for these generally contain 95-percentile Standards for Sanitary Determinands. They may also include Upper-tier Standards for Sanitary Determinands and Absolute Limits for Non-sanitary Determinands.

To be declared Compliant in this report, the discharge must not fail any of the standards in its Consent.

95-Percentile Standards

These standards must be met for 95% of a 12 month period. A certain number of sample results may exceed the limit in any period of 12 complete months. The number of permitted failures is laid down in a Look-up Table. This is referred to in the Consent. If the number of failed samples is more than the number permitted by the Look-up-Table, then we are 95% certain that the failure is not due to chance. We report the discharge has having failed its 95-Percentile Standard.

These are the only types of standards for which the rules for assessing compliance follow statistical principles. For this reason performance against 95-percentile standards has a special role in showing trends.

Descriptive Consents

A discharge with a Descriptive Consent is judged by Inspections, as opposed to the analysis of chemical samples. We record the discharge compliant if it passes its set of inspections in the reporting period.

Discharges not Operated by the Water Companies

The Numeric Consents have Absolute Limits whether for Sanitary or Non-sanitary Determinands. 95-percentiles are hardly ever used. Absolute Limits may not be exceeded in any sample.

In most cases the numbers set in these discharge standards start out as values calculated as 95-percentiles. But they appear in the Consent as Absolute Limits. For this reason, all else being equal, the performance of these discharges will always appear worse than those of the Water Companies.

APPENDIX B: INFORMATION FOR REGIONS

Table B1: Compliance for Discharges from Water Companies' Sewage Treatment Works
(Percent Compliant of those Discharges Monitored)

Region	All Discharges	Numeric Consents	Descriptive Consents
Anglian	97.2	96.9	97.7
North West	89.3	97.5	70.7
Northumbria & Yorkshire	95.0	95.5	94.6
Severn Trent	94.5	98.9	78.7
South Western	85.5	90.0	78.5
Southern	92.6	98.9	69.7
Thames	95.3	95.1	100.0
Welsh	93.4	93.7	92.8
England & Wales	93.2	95.6	87.3

Table B2: Compliance for Discharges from Water Companies' Sewage Treatment Works
(FOR VARIOUS TYPES OF STANDARDS IN NUMERIC CONSENTS)

(Percent Compliant of those Discharges with the Type of Standard and Monitored)

Region	With All Numeric Standards	With 95-percentile Standards	With Upper-tier Standards	With Non-Sanitary Standards
Anglian	96.9	97.8	92.9	97.1
North West	97.5	98.0	75.0	91.7
Northumbria & Yorkshire	95.5	95.5	92.3	72.2
Severn Trent	98.9	99.9	99.0	92.6
South Western	90.0	91.7	84.5	76.0
Southern	98.9	98.8	94.6	100.0
Thames	95.1	95.9	100.0	83.3
Welsh	93.7	97.2	90.9	94.2
England & Wales	95.6	97.0	91.9	90.5

Table B3: Compliance of Discharges not made by the Water Companies (Percent Compliant of Discharges Monitored)				
Region	Sewage Treatment Works with Numeric Standards	Trade Discharges with Numeric Standards	All Discharges with Descriptive Standards	All Types of Discharge and Consents
Anglian	51.0	65.6	87.0	62.8
North West	38.5	74.6	-	73.7
Northumbria & Yorks	64.4	76.2	93.7	83.5
Severn Trent	51.7	76.6	72.3	76.7
South Western	45.5	41.2	100.0	63.4
Southern	42.7	42.1	-	52.8
Thames	64.3	72.3	-	73.8
Welsh	50.2	55.8	90.7	68.3
England & Wales	52.8	69.0	86.4	75.7