

NATIONAL RIVERS AUTHORITY
WELSH REGION
REGIONAL REVIEW 1989/90



WELSH REGION

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ENVIRONMENT AGENCY

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1. FOREWORD

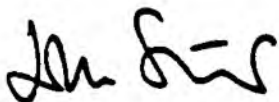
Any review of this last year's achievements must recognise the major efforts made in setting up the NRA in the Region. Staff have adapted readily to the different emphases of the new organisation and to changes in working practices. The challenges faced in the inaugural year could scarcely have been more daunting. The summer of 1989 proved to be one of the most severe droughts on record, and great skill was required in managing water resources, so as to maintain water supplies without lowering river flows to unacceptable levels. The following winter saw flooding of exceptional severity, and a serious breach of sea defences in North Wales. The defences concerned were not owned by the NRA, and there is already pressure for a unified policy towards coastal defences in the Region.

While the question of global warming, and its implication in generating the recent unusual weather patterns, is debated, there is greater agreement on the severity of another international problem, that of acid rain. The Welsh Region remains in the forefront of investigations into this problem, and its effects on base-poor upland areas which are exacerbated by conifer afforestation.

Elsewhere in the Region, the impact of Man's activities on the environment is changing, requiring new scientific models and management practices. The decline of heavy industry in the South Wales Valleys continues to offer real scope for restoring migratory salmonid fisheries, while in the Dee Estuary the problem is one of regulating new industrial development so as to preserve the rich wildlife communities that already exist. Above all, however, it is the proliferation of coastal barrage proposals that challenges our ability to predict the consequences of such developments on complex environmental systems.

The recognition that each catchment presents its own unique mix of problems has promoted the development of a major management initiative, that of catchment management planning. The Welsh Region is playing a leading role in the derivation of National guidelines, with the prime objective of translating a wide-ranging, potentially complicated concept into a simplified and systematic working procedure. In seeking to achieve its environmental objectives, the NRA relies heavily on persuasion and the efforts of other organisations; the particular strength of catchment management plans is that they provide a formal arena for the statement of consensus management decisions.

While each NRA Region has its own character, the Welsh Region is unique in possessing a distinct national identity. This has been recognised at Ministerial level with the proposal to set up a Committee specifically to advise the Secretary of State for Wales on water-related environmental issues. The NRA acknowledges the importance of this Welsh culture and has implemented a bilingual policy, in a genuine attempt to carry the people of Wales with us in our plans.



Dr. John Stoner

Regional General Manager

2. SUMMARY OF KEY ACHIEVEMENTS

2.1 General

- o The acquisition of assets under the Welsh Water Authority Scheme of Transfer has been completed successfully.

2.2 Water Resources

- o A functional strategy has been formulated for the management and planning of Water Resources.
- o Formal Water Resources Management Schemes have been agreed with Welsh Water Plc, under Section 126 of the Water Act, for regulation of the Rivers Dee, Aled, Clwyd, Dwyfor, Wye and Tywi.
- o A programme has been implemented for the installation of a Regional automatic computer-based system for recording, transmitting and processing hydrometric data.

2.3 Pollution Control

- o A new Pollution Emergency Procedure has been implemented, and a 24-hour centre set up at Regional Headquarters.
- o The Regional Laboratory Service won, and carried out, a contract for heavy metal analysis on behalf of DoE, involving samples from all NRA Regions, in relation to the Red List Reduction Survey.
- o Expert evidence has been given to the House of Commons Committee examining the Cardiff Bay Barrage Bill, and this is likely to alter significantly the Report Stage.
- o Expert evidence was also given to the Welsh Affairs Select Committee on Toxic Waste Disposal in Wales, and this evidence has recently been published.

2.4 Flood Defence

- o Operating centres have been successfully established, following the splitting of the former Welsh Water Authority.
- o A major flood alleviation scheme (> £2m) has been completed to protect the town of Monmouth in the Wye catchment.
- o A large scheme has also been completed at Llanhilleth in the Ebbw catchment.

2.5 Fisheries

- o Fish passes and traps were installed on Panteg Weir (River Tawe) and Radyr Weir (River Taff).
- o Two fish culture units have been refurbished at a cost of £130k.
- o Over 50000 salmon and 25000 sea trout parr and smolts were microtagged and released into Welsh rivers.
- o Design and site investigations have been completed in relation to the Conwy Falls fish pass, which, when constructed, will be the longest in the U.K.

2.6 Recreation

- o The lease of the Canolfan Tryweryn National White Water Centre will be transferred to Meirionydd District Council on April 1st 1990, with the Welsh Canoeing Association responsible for day to day management.
- o A recreation project for the River Wye has been set up in collaboration with nine public bodies, and a Project Officer appointed for a period of three years.

2.7 Conservation

- o Guidelines for the implementation of the DoE's Water Act Code of Practice on Conservation, Access and Recreation have been drawn up by the Region, and are under discussion with a view to adoption as NRA policy.
- o Major habitat improvements have been implemented in conjunction with capital works on the Hawarden Embankment (River Dee) and the Solfach Flood Alleviation Scheme.
- o Further habitat improvements have been implemented throughout the Region, notably in relation to otters on the Rivers Tryweryn and Usk.

2.8 Support Services

- o The "Comprehensive Electronic Office" system has been established, linking major sites throughout the Region.
- o A guide to the Water Act 1989 as it affects the Authority has been published and will be used as a basis for training both legal and functional staff.
- o A major book summarising ten years' research into "Acid Waters in Wales" has been published.
- o Detailed Catchment Management Plan Guidelines have been produced, along with illustrative documents, for use in the derivation of NRA policy.

- o A computerised system for the administration of Town and Country Planning Consultations has been set up in each Division.
- o A "stand alone" Finance function for the Region was set up from April 1st 1989.
- o Effective personnel management practices have been in place since April 1st. 1989.

3. REGIONAL COMMITTEE REPORTS

3.1 Regional Advisory Board

- 3.1.1 The Regional Advisory Board met three times during the period under review, discussing a wide range of Regional and National issues. This report addresses only those issues which impinge on national policy or on outside organisations within the Region.
- 3.1.2 In two important areas, that of net licensing and pollution prosecution, it had been recommended by NRA Head Office that the previous involvement of members should be discontinued and that these matters should be determined by officers only. The RAB concluded that this procedural change had disadvantages and that the support of officer recommendations by members might provide a robustness to the external perception of decisions in politically sensitive areas. It was formally recommended that the Authority should retain member involvement in the allocation of net licences, in the Welsh Region by the inclusion of the Chairman of RFAC on the Net Licensing Committee. With respect to pollution prosecutions, the Regional Board Member and Chairman of RRAC should have an opportunity to comment on recommendations by officers on pollution prosecutions.
- 3.1.3 Arising from a major pollution incident on the River Rhymney, following a fire at an industrial premises, it was felt that information concerning the storage of potentially dangerous chemicals near watercourses should be more readily available to the NRA. The chairman of RFAC agreed to pursue the matter in the House of Lords. Concern was also expressed about the issue of warnings to the Public regarding the taking and consumption of fish found after such incidents. Whilst the NRA had no formal locus, qualified warnings by NRA staff - until Local Authorities could properly assess safety issues - was regarded as responsible action to take.
- 3.1.4 Serious pollution incidents reinforced the need to pursue the proposed Protection Zone for the River Dee with the Welsh Office. The avoidance of pollution by this measure, rather than a reactive approach through prosecutions was regarded as crucial, particularly where important water and fishery resources are at stake. It was recommended that the matter should be discussed by the Secretary of State's Committee.
- 3.1.5 Apart from the problems of chemical pollution, attention was increasingly being focused on the problem of litter along watercourses, a problem most severe in the industrial valleys of South Wales. The new NRA powers included in the Environmental Protection Bill made advisable a closer association with the Keep Wales Tidy Campaign and, as far as resources would allow, an involvement in selective and collaborative "clean-up" exercises. The Regional staff were congratulated on their studies of the character, distribution and origin of litter in the Taff catchment.
- 3.1.6 On the subject of Flood Defence, the RFDC Chairman warned that the level of bank maintenance would need to be upgraded. It was necessary to ensure maintenance to a high standard for the 30 years' duration for which some of the schemes were designed. Furthermore, there was a need to establish a principle - Welsh Office and MAFF would have to agree on the need for upgrading.

3.1.7 Turning to an issue of high Regional importance, it was noted that the document prepared for the House of Commons Committee on the Cardiff Bay Barrage Bill, originally prepared under the aegis of Welsh Water, was revised in areas, such as blue-green algal blooms, where further information was now available. A study was also made of the likely impact of the mini barrage that was being promoted by RSPB and other interests.

3.1.8 The RAB examined the extent to which the NRA Welsh Region provided arrangements recommended in the documents prepared by the Welsh Language Board - "A Bilingual Policy: Guidelines for the Public Sector". Whilst there was generally close concordance between NRA practice and the guidelines it was recommended that residual matters should be discussed by the Secretary of State's Committee.

3.2 Regional Rivers Advisory Committee

3.2.1 During the period under review, the Committee met twice and discussed a wide range of issues within the broad framework of river basin management.

3.2.2 In examining the working practices to be adopted by the NRA, the Committee accepted the Pollution Enforcement Policy which had been formulated by NRA Head Office, based on the policy considerations inherited from the former Regional Water Authorities. The importance of prevention rather than cure in this field was stressed, and the use of Protection Zones was highlighted for those areas, such as the Dee, where intakes were vulnerable. A paper outlining the Pollution Emergency Procedures in force within the Region was presented, and this was noted by the Committee. Turning to the Water Licensing Enforcement Policy, the Committee accepted the interim guidelines drawn up locally in advance of a national policy and congratulated Welsh Region on taking this initiative. On the subject of effluent disposal, the consultation paper prepared by DoE and the Welsh Office on Charges for Discharges into Controlled Waters was noted, and the importance of adequate notice and consultation with industry prior to the introduction of any new charging scheme was stressed.

3.2.3 On a separate policy issue, the Committee requested clarification on the NRA's obligations in relation to private water supplies. It was confirmed that monitoring of such supplies, along with quality enforcement, was a matter for Local Authorities.

3.2.4 A quarterly report by the Regional General Manager was introduced as a regular agenda item, and this was also selected as the vehicle for presenting information on pollution incidents and prosecutions. A paper on the Environmental Protection Bill was presented, with an indication that the progress of this legislation would be carefully monitored during its passage through Parliament. The Committee's attention was also drawn to two recently introduced Bills relevant to the Region, the Caldey Island Bill and the Burry Port Harbour Bill.

3.2.5 Presentations were given to the Committee on several issues with a high local profile. In receiving a report on the major litter problem in the Taff river corridor the initiatives for a "clean up" campaign were supported. The fundamental problem was one of raising the Public's expectations for the river environment; in this connection the question of erecting signs indicating the names of rivers was raised and considered worthy of being pursued. On quite a different

front, a serious problem was being experienced in relation to large craft on the River Wye, and a recommendation to prepare for new Byelaws in order to regulate navigation was accepted.

- 3.2.6 As well as considering single issues in their own right, the Committee examined the interactions between different river users and discussed the conflicts which might arise. Within the NRA, attention was focussed on the potential impact of Flood Defence works on the Fisheries, Conservation and Recreation interests. A paper was presented outlining the Liaison Procedures effective within Welsh Region and this was **noted** for information. The Committee's attention was drawn to the conservation duties imposed upon the NRA by the Water Act 1989, with the comment that additional funding did not appear to have been made available to cover this. This paper was also **noted**.
- 3.2.7 The Committee received a presentation on the River Wye Project, which had been set up by the Region in conjunction with other public bodies as a means of resolving conflict between different recreational activities. The Steering Group was chaired by the Regional Board Member and periodic progress reports in relation to this project were requested.
- 3.2.8 Since its inception, NRA Head Office had emphasised the importance of structured planning in conducting the organisation's affairs, and the Committee fully endorsed this approach. On this subject, a presentation was received outlining the Region's contribution to corporate planning at a National level. A strategy document had been prepared for the Water Resources Function, and this would be used as a template for similar documents in relation to other principal functions throughout the NRA. In addition to these "Functional Strategies", "Service Strategies" were being prepared in relation to issues such as sewage discharges and these would be used by the Region as a basis for discussion with outside bodies. The Committee fully supported the concept of using carefully thought-out documents such as these, as the building blocks of a coherent overall policy for the organisation.
- 3.2.9 In addition to these specific strategy documents, the Region was playing a leading role in promoting "Catchment Management Plans" as a framework for realising the environmental potential of a catchment within practical constraints. These Plans relied heavily on agreements drawn up between the various river users in establishing a consensus strategy for managing the catchment concerned. The Committee particularly welcomed the wide level of involvement that these Plans offered, and was able to offer useful advice on the consultation procedures that should be adopted. The report was **noted**, and a request was made that details of the procedure implemented, and the results obtained, should be presented to a future meeting. It is clear that this Committee, with its diverse and experienced Membership, is well qualified to provide continuing sound advice on the development of this key aspect of NRA policy.

3.3 Regional Fisheries Advisory Committee

- 3.3.1 Three meetings of the Committee were held in the period under review, initially as constituted by the former Welsh Water Authority and subsequently by the NRA. In order to preserve continuity, and to retain valuable experience, the composition of the reconstituted

Committee has not been greatly altered, but a new chairman has been appointed and Members have in the first instance been appointed for only twelve months. The new Committee preserves a careful balance between Regional representatives and particular interests (Anglers, Netsmen, the two Sea Fisheries Committees, Fish Farming and the Institute of Fisheries Management).

- 3.3.2 The new Committee aims to give the NRA Welsh Region constructive, realistic and helpful advice on its statutory duties to maintain, improve and develop fisheries, paying special attention to the fact that two of these duties involve not merely preserving existing fisheries but making them better. In practice this advice is not normally given formally, but at Committee meetings Members question the Regional Chairman, the Regional General Manager, the Regional Fisheries, Conservation and Recreation Manager and other staff, and give their views on current fisheries problems. Between meetings, the Chairman is in constant touch with NRA staff about these matters.
- 3.3.3 The Committee also aims to act as a channel between the NRA and fishermen of all sorts, bringing the concerns of fishermen to the attention of the NRA and helping to explain NRA policies to fishermen.
- 3.3.4 A wide range of subjects and issues were considered during the year under review. Illegal fishing is one of the principal concerns of fisheries management in the Region and the Committee **received** reports on illegal fishing in 1988, salmon dealer licensing, proposals for a salmon protection video, sea fishery byelaws and illegal fishing in 1989. Further reports were requested on fishery prosecutions and the implementation of sea fishery byelaws.
- 3.3.5 Environmental issues as they impact upon the fishery resource were also considered. Exceptionally low flows were experienced in 1989, with drought orders being introduced, and reports were **received** in respect of impact assessment studies with a further report to follow. In addition reports were **received** on acidification studies in Wales (Llyn Brianne Project), afforestation and the Environmental Protection Bill. Members were concerned about the potential overlap of responsibility between the Authority and HMIP. A further report on afforestation guidelines has been requested.
- 3.3.6 The Committee was provided with updates on the Water Bill and Asset Transfer. A position paper on fisheries finance was noted with a **request** for a further report. Regular updates were provided on the assessment of several fisheries of keen interest to the Committee.
- 3.3.7 A new feature, as with the Regional Rivers Advisory Committee and the Flood Defence Committee, is the submission of the Regional General Manager's Quarterly Report, which highlights principal activities and events in the preceeding quarter. This provides both perspective and information to members. Arising from these, it was **resolved** that the problem of exemption from control of disused and abandoned mines be raised at a national level.
- 3.3.8 Regional issues of particular note which were submitted to the Committee included position papers on proposed barrages for the Severn Estuary, and for the Rivers Taff and Usk. The Committee was advised of re-drafted Regional guidelines in respect of Fisheries, Conservation, Recreation and Flood Defence Liaison Procedures. The results of the Region's annual juvenile salmonid monitoring programme

were presented, and these were noted as providing valuable information. A report was requested and subsequently received on the use of fish counters. A major issue is the multiple use of the Wye arising from the right of navigation. The Committee received the report on this matter, with a request to be advised of progress and the promotion of regulatory byelaws. The Committee expressed concern over the NRA's inability to refuse net licences to convicted poachers, even though recent legislative changes provided for the courts to withdraw licences after a first conviction.

3.3.9 Information papers were submitted on the revised Regional fisheries staff organisation, the genetic impact of farmed Atlantic salmon on wild populations and the law of the NRA.

3.3.10 The Committee considered the need for local liaison arrangements and resolved that 5 local advisory committees be established and reviewed after one year.

3.4 Regional Flood Defence Committee

3.4.1 Four meetings have been held during the course of the year on 14th April 1989, 14th July 1989, 13th October 1989 and 12th January 1990.

3.4.2 Each of the meetings of the Regional Committee was timed to conclude the cycle of quarterly meetings of each of the six Local Flood Defence Committees reflecting the six distinct geographic and cultural areas of the Welsh Region (including parts of Hereford and Worcester in the Wye Catchment).

3.4.3 The October meeting combined the usual business meeting with the annual site visit which enabled members from other parts of the Welsh Region to see the particular drainage pattern in the rural areas of the Wye catchment. The visit culminated in an inspection of the Monmouth Flood Alleviation Scheme, the major project in the Capital Programme.

3.4.4 Matters which dominated committee discussions throughout the year were concerned with the transition to full NRA management of Flood Defence matters and the future funding arrangements.

3.4.5 Other key issues specific to the Welsh Region were:-

- Navigation on the Wye (the Wye Invader).
- Opening of the Dyfed Weather Radar.

3.4.6 At the last meeting of the year at which the County Precepts were set, the NRA Board Member with special responsibility for Flood Defence, Mr Norris and the Director of Technical Services, Dr Swinnerton, were present to mark the retirement of Major Howard Jackson who has chaired the Committee since 1983.

4. FUNCTIONAL REVIEWS

4.1 WATER RESOURCES

4.1.1 General

The management of water resources is one of the most important functions of the NRA, safeguarding as it does, essential water supplies for industry, agriculture and the domestic consumer; whilst at the same time, ensuring that the environmental needs of the rivers are properly protected.

The management of these resources is becoming ever more complex with the increasing use of multi-resource supply systems and the demand for a high quality environment. In the Welsh Region, this is of particular relevance, where major conjunctive use schemes of national strategic importance, utilise the same river systems which support the NRA's premier game fisheries.

In the past year, the Welsh Region has taken a number of important steps for the effective management and planning of these resources. In particular, a strategy has been prepared to organise the way in which the main challenges will be tackled and a start has been made on a number of priority issues which are discussed in the following sections

4.1.2 Water Resources Management Schemes

The Welsh Region has entered into formal Water Resources Management Schemes with Welsh Water Plc, under Section 126 of the Water Act 1989, for the major river regulation schemes within its area. These Schemes enable the Authority to ensure that river regulation releases are properly controlled to balance the interests of water supply with those of the environment. The rivers covered under such Schemes include the Dee, Aled, Clwyd and Dwyfor in North Wales, the Wye in South East Wales and the Tywi in the South West of the Region.

In addition to the Schemes under Section 126 of the Water Act, the Authority has commenced negotiations with Welsh Water Plc to agree an operational strategy for the major resources of South East Wales.

4.1.3 Dee Consultative Committee

The Dee Consultative Committee is a Statutory committee set up under Section 9 of the Dee and Clwyd River Authority Act 1973 and is responsible for assisting the Authority in the formulation of procedures for regulating the R.De. The committee has been reconstituted following the implementation of the NRA and is now Chaired by Prof R.W.Edwards, the Board member for the Welsh Region.

4.1.4 Low Flow Investigations

The NRA has completed its contribution to a national review to identify rivers where flows have been reduced to an unacceptable level as a result of overabstraction. The Welsh Region is taking a national lead in this work and is carrying out a detailed review of one of its heavily abstracted catchments to quantify the effects of abstraction on flows and the impact on the environment. It is

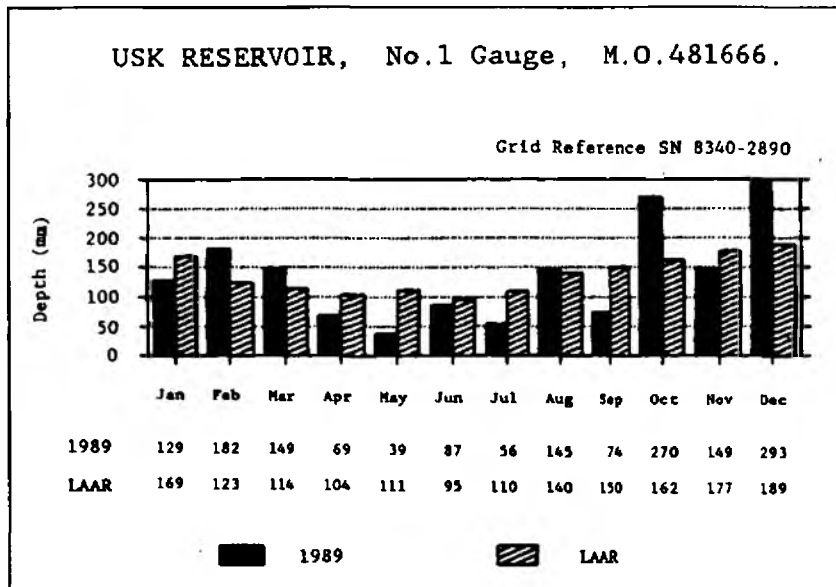
expected that the investigation will lead to proposals to revoke certain abstraction licences employing rarely used legislation as a national test case.

In North Wales, low flow problems have been experienced for many years on the R.Alyn, a tributary of the R.Dee, which result not from overabstraction, but from a lowering of the water table by deep seated mine drainage dating back to the last century. The problem is exacerbated by the limestone catchment geology which assists the passage of river flows into the subterranean strata. The Region has commissioned a feasibility study into the problem to investigate the options available for remedial works and will be receiving the results later in 1990.

4.1.5 The Drought of 1989

The summer of 1989 proved to be one of the most severe droughts on record and a total of ten Drought Orders were required to conserve water resources to maintain supplies. Improved operational management of the South East Wales water grid, together with the Wye transfer, delayed the need for a Drought Order to reduce the natural low flows on the R.Usk until the first week of October. The drought finally broke two weeks later.

The figure shown below indicates the severity of the 1989 drought compared with average rainfall (LAAR).



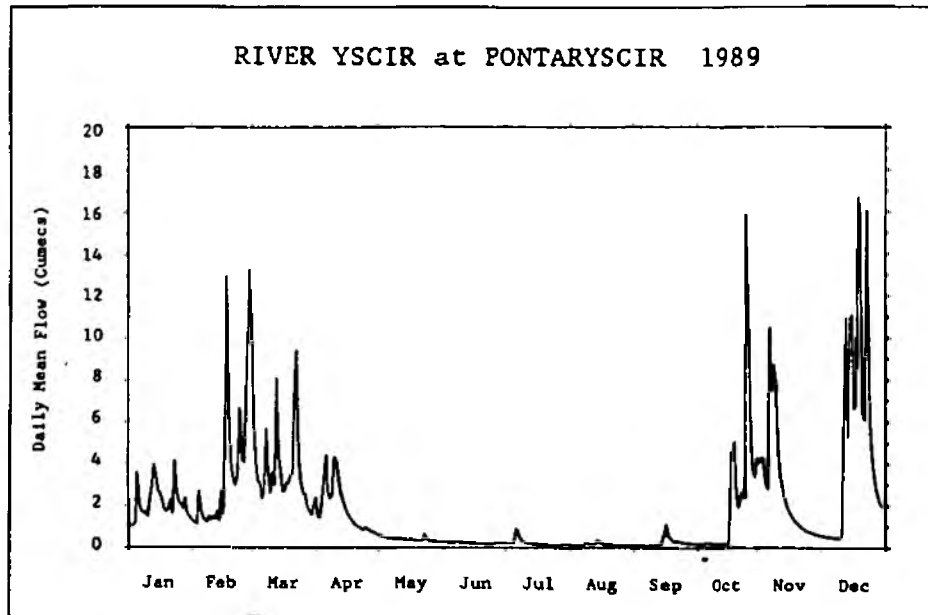
4.1.6 Hydrometry

The management of water resources is largely concerned with assessing the quantities of water available by field measurement and managing those resources to meet demand. This requires a network of river gauges to continuously measure river flows at strategic sites and generates over 3 million data items each year. In order to handle this information more efficiently, a programme has been implemented across the Region for installing an automatic, computer-based system for recording, transmitting and processing hydrometric data. The software for this system has been developed by the Welsh Region and

is attracting considerable interest within the NRA and the water industry.

The system will display real time flow data from any of the Region's river flow measurement stations and will be an essential component for monitoring and managing the major river regulation schemes.

Data recorded and archived by the system during the 1989 drought is reproduced below for the river gauging station at Pont ar Yscir, which is on a tributary of the River Usk.



4.1.7 Scheme of Abstraction Charges

The Water Act 1989 made a number of important changes to the water abstraction licencing and charging legislation. In particular, the Act requires that with effect from 1st September 1990, all agricultural abstractions (including fish farms) greater than 20 cubic metres per day, should be licenced and will therefore be liable to abstraction charges. As a result of this and other amendments, the Regional Scheme of Abstraction Charges has been amended and sealed by the Board. A full national Charging Scheme will be introduced in April 1992.

4.2 POLLUTION CONTROL

4.2.1 General

The major tasks facing the Pollution Control and Laboratory Services Functions have been associated with setting up operational systems to deal with new responsibilities under the Water Act and with the changes brought about by the creation of the NRA.

4.2.2 Pollution Emergency Procedures

New pollution investigation procedures, enshrined in a Pollution Incident Communications and Reporting Manual (PICRM), were in place from the 1st. April to ensure pollution incidents were dealt with consistently and effectively. A formal standby system was also introduced to ensure that at least two officers in each Division could be contacted at any time to deal with such incidents.

In addition a 24 hour centre was set up at St Mellons manned by contract staff to deal with all out of hours pollution calls for the Welsh Region and to refer them to the standby officers.

An Emergency Procedures Review Group was set up which has reviewed major incidents and has also tested the system with three test incident exercises. Procedures were amended where necessary and a major update of PICRM was completed.

It is a credit to the commitment and professionalism of pollution control staff that despite an enormous work load, the vast majority of incidents have been dealt with promptly and effectively. One incident that did attract adverse comment, principally as a result of the vast volume of calls from the public and MPs, resulted from a fire at a works on the R.Rhymney. A call sequencer has now been installed incorporating a messaging facility which can be used to filter out non-essential calls and assure the public that their calls will be dealt with. Further improvements include a rota for additional switchboard staff and provision of an Information Desk.

4.2.3 Prosecution Procedures

A standard Regional categorisation of the severity of impact of pollution incidents was operating in April which required only minor modification following implementation of Head Office policy on September 1st.1989. This, together with a decision tree based on attitude and past record of the polluter, allowed consistent approaches to be taken with recommendations to prosecute.

A number of major prosecutions were completed during the year; chief among these were two fines, each of £10k, on British Tissues in respect of the pollution of the R.Llynfi and R.Ogmore in December 1987 when over 28,000 salmonids were killed. Compensation of around £200k was also agreed in connection with this incident.

4.2.4 Discharge Consents

Prior to the flotation of Welsh Water Plc, the Regional Rivers Division of Welsh Water Authority were instructed by the Government to relax the conditions of Sewage Treatment Works discharge consents which met with certain criteria. In all, applications were made for some 123 relaxations, of which 100 were granted. A total of 72 of

these relaxations are timelimited to expire in 1992 or earlier when more stringent conditions will come into force, whilst the remainder are relaxations to long term RQO based consents. In addition consents were issued for all Welsh Water Plc discharges prior to flotation.

A Consents Procedure Manual, based on Welsh Water Authority policy, has been drafted to ensure a consistent approach to the determination and administration of discharge consents. This may well need to be changed once NRA policy has been determined.

Work began in January on reviewing the discharge register in preparation for the development of a charging database. The register will require considerable modification and this will be undertaken once the detailed proposals have been finalised.

4.2.5 Laboratory Services

The setting up of the NRA resulted in an increase in sample loading at the Penyfai Laboratory as samples were received from South East as well as South West Wales. Despite this, consistently high turnaround figures were achieved for sample analysis at both Penyfai and Caernarfon Laboratories, due in part to increased automation of analytical equipment but also to the motivation and skill of Laboratory staff. Penyfai Laboratory also took on additional work on behalf of the South West and Wessex Regions for the analysis of all their Plc discharge samples, employing contract staff in order to complete the work.

Increased throughput was not achieved at the expense of quality control as the following satisfactory Interlaboratory Calibration Exercises revealed:-

- (a) International Council for the Exploration of the Sea (ICES)
- (b) Scottish Acid Waters Baseline Study
- (c) Aquacheck (WRC)
- (d) Warren Springs UK Secondary Precipitation Comparative Monitoring Network.

The reputation built up by the Caernarfon and Penyfai laboratories was, in part, responsible for the awarding of the national contract in 1989 for the analysis of heavy metals for the Red List Reduction Survey; this involved the analysis of over 2000 samples from all NRA Regions for an extensive list of metallic determinands.

4.2.6 Pollution Problems

Blooms of the alga Phaeocystis were experienced in the Spring and early Summer months in North and West Wales coastal waters. This perennial problem gave rise to considerable quantities of brownish slime froths and foams which resulted in numerous complaints from the general public who had mistaken it for sewage derived material.

Few farm pollution problems were experienced during the dry weather of summer and autumn. However the first three months of 1990 have been very wet resulting in many slurry and land runoff-related pollution incidents. In an effort to induce improvements a "Clean Rivers Cup" competition has been launched with prizes totalling

£3,000 for farmers who have undertaken work to reduce the risk of pollution from their farms.

4.2.7 **Improvements in the Taff**

Further improvements are expected in the quality of the Taff following a spate of colliery closures, the planned partial closure of the Phurnacite smokeless fuel plant and the diversion of a major polluting effluent to the foul sewer.

4.2.8 **Barrages**

Estuarine barrage proposals continue to generate a substantial workload. Considerable effort was devoted to the preparation and presentation of oral and written evidence on water quality issues to the House of Commons Select Committee scrutinising the Cardiff Bay Barrage Bill. Negotiations are now underway with the promoters of a barrage across the Usk estuary, and a detailed water quality and fisheries monitoring programme has been developed to assess the impact of the Tawe Barrage presently under construction.

4.2.9 **Toxic Waste Disposal**

Expert evidence was given to the Welsh Select Committee on Toxic Waste Disposal in Wales, explaining the NRA's concern over the serious adverse effects that can be caused by tip leachate.

4.2.10 **Protection of River Dee**

The NRA has taken on an active role in protecting the quality of the River Dee, by participating in the joint committees set up after the Ridley Report, maintaining an intensive monitoring programme and operating an automatic monitoring station.

4.2.11 **Bathing Waters**

The bathing waters improvement programme is generating a substantial workload which will continue for several years. A procedure has been agreed with Welsh Water Plc in which the modelling and field work is undertaken by the discharger, while the NRA concentrates on identifying the standards to be achieved and vetting the proposed solutions.

4.2.12 **Litter**

A major project has been undertaken on the River Taff to quantify the types of litter present and the major sources within the catchment. The report has highlighted the complexity of this long standing problem and is being used as a vehicle in bringing together the various statutory bodies to develop a coherent remedial strategy.

4.2.13 **Marine Fish Farms**

A technique for consenting and controlling marine fish farm developments in Milford Haven has been developed. These techniques are presently being discussed with representatives from Scotland and Northern Ireland with a view to developing a national approach.

4.2.14 Sea Mammals

An effective system for recovering, sampling and performing autopsies on dolphins and porpoises washed ashore in Wales has been developed in conjunction with the Natural History Museum, DoE, Liverpool University, MAFF and Sea Mammals Research Unit to establish whether elevated levels of organic pollutants in sea mammals are widespread and a contributing factor to their deaths.

4.3 FLOOD DEFENCE

4.3.1 General

Flood Defence in the Welsh Region is very varied. The rivers and their catchments have substantially different characteristics ranging from long rivers with extended flood duration to very short steep flashy rivers through the South Wales Valleys.

The topography of Wales and the incursion of the Severn Trent NRA Region in Mid Wales dictate that Flood Defence is operated on the basis of six major catchments, each of which has its own Local Flood Defence Committee. Administratively, these catchments are grouped into three divisions each with a Flood Defence Manager who controls a group of staff and manual workers based in Area Offices.

Transport and Plant, Engineering Services (not including Design) and Telemetry/Electrical services are operated as support services from the head office in Cardiff.

To highlight the issues of the review year they will be noted under the Local Flood Defence Committee which raised them. However, most issues, with the exception of localised flood problems, have relevance to all Committees.

4.3.2 Dee and Clwyd

Development encroaching on to the flood plain and the difficulties of maintaining access for maintenance purposes on main river are continuing to cause concern.

Extensive flooding behind the breached sea wall owned by British Rail at Towyn in March 1990 highlighted the vulnerability of the considerable length of Sea Defences owned by NRA round the Welsh Coast. NRA personnel assisted substantially in the evacuation of residents and the subsequent pumping out of the flooded area which extended for 10 square kilometres.

4.3.3 Glamorgan

The Cardiff Bay Barrage proposal is contained within the area and extensive public interest in flooding issues has developed. The recently completed Cardiff Flood Alleviation Scheme has protected the city throughout the year and attention is now focussed on schemes higher up the valleys, where problems are more complex.

Following the flash floods of February and March, problems at Pontypridd have been highlighted. Previously it has proved impossible to persuade other local interests, both public and commercial, to contribute to a scheme to make it viable.

4.3.4 Gwynedd

This area also suffered from the surge tide and onshore winds of Spring 1990. The area South West of Caernarfon was affected most severely, with extensive sea flooding of an agricultural area containing four farms. In addition other sea defences, including sand dunes, were damaged in places down the coastline and the revenue maintenance budget will be stretched to achieve adequate reinstatement.

4.3.5 South West Wales

Although the area escaped major flooding throughout the year, several local areas give rise to concern. The most well known is Carmarthen. The Hydraulics Research Laboratory at Wallingford has now completed its modelling of the River Tywi through the town and bids are shortly to be received from Consultants to design modifications and enhancements to the existing defences.

4.3.6 Usk

Here, there is parallel concern with Dee and Clwyd with regard to development proposals, particularly following the Towyn disaster. Consultations with the local Planning Authorities for the extensive area of flat land behind the sea wall of the Severn Estuary are now underway. The aim is to develop a co-ordinated approach to the drainage of all new development. A proposal for a Barrage across the Usk is also being evaluated. The capital schemes completed in the Usk following the 1979 flood coped with the 1990 floods although extensive areas of agricultural land were flooded for up to three days.

A major scheme, exceeding £250k, was completed at Llanhilleth on the River Ebbw.

4.3.7 Wye

The largest capital project this year has been virtually completed in the Wye Catchment at Monmouth. The scheme cost more than £2 million and will protect the town of Monmouth from floods from both the Monnow and the Wye. In general, the unfinished scheme performed well in the spring floods of 1990 but problems of side stream flooding remained. These are being discussed with the Local Authorities with a view to modification before the next flood season.

4.3.8 Flood Warning

The early winter saw the consolidation of the flood warning system within the three Divisions. Each Division was able to benefit from data generated by the Dyfed Weather Radar Station, which was jointly funded with other NRA Regions and the Met Office, and opened by Lord Crickhowell in September 1989.

The Spring floods have tested our Flood Warning System which generally worked well. The routine, post-event reviews will indicate the potential for improvement.

4.4 FISHERIES

4.4.1 General

The Fisheries function of Welsh Region operates divisionally alongside Conservation, Recreation and Navigation within the Environment and Quality Department. In addition, investigational work is carried out within the outposted Environmental Appraisal Units of the Regional Planning Department and there is a small Regional unit responsible for liaison, co-ordination and policy development.

4.4.2 Enforcement

In pursuing its statutory remit to maintain, improve and develop fisheries the function has a major responsibility for the enforcement of fisheries protection legislation contained mainly within the Salmon and Freshwater Fisheries Act 1975 and the Salmon Act 1986. A core of 60 full-time bailiffs discharge these responsibilities, with the help of casual and honorary staff. An enforcement training module has been developed and implemented for recruits during the year.

A successful recent innovation has been the flexible deployment of bailiffs across Divisional boundaries, thus allowing improved targetting of problem areas. In addition, the Authority's estuary patrol boats have proved to be a major deterrent to illegal fishing.

Although low water levels made 1989 an atypical period for angling and poaching, Fisheries staff were encouraged by a number of notable convictions:-

- (a) of two defendants fined £1000 each at Caernarfon Crown Court, one received a further suspended sentence of 9 months imprisonment and their boat and equipment was confiscated;
- (b) a ghillie found guilty of illegally netting on the River Usk had his equipment confiscated, was fined £1750 and had costs of £4138 awarded against him;
- (c) two men were sentenced to 3 months and 14 days imprisonment respectively after netting on the River Tawe. Their vehicle and equipment including wetsuits were confiscated;
- (d) a man who claimed to bailiffs that poachers from Bridport had taught him to use nets on the River Wye was fined £950 and had his net, dinghy and three salmon confiscated by magistrates at Tintern;
- (e) vehicles used by poachers on the River Dee were confiscated by courts in two cases along with substantial fines and prison sentences.

A successful prosecution for handling fish which had been taken illegally showed the benefit of the Authority's awareness campaign aimed at people trading in salmon and sea trout. Magistrates noted that the defendant had received an Authority leaflet explaining the law with regard to the sale of salmon and sea trout, and fines of £800 on three charges were imposed.

New byelaws for the control of coastal fisheries having an impact upon migratory salmonids were discussed with local Sea Fishery Committees for possible promotion under the Salmon Act during 1990.

A subsidiary company of Welsh Water Plc, Aquanorse, which farms salmon in Milford Haven, was successfully prosecuted for failing to obtain NRA consent for the introduction of fish to its rearing cages.

4.4.3 Improvement and Development

The provision of passes to help migratory salmonids traverse obstacles, particularly weirs, has formed an important aspect of improvement work. A pass and trap on the Panteg Weir on the R. Tawe was successfully completed. A similar pass and trap on the Radyr Weir on the R. Taff near Cardiff was constructed as part of the fisheries monitoring programme financed by the Cardiff Bay Development Corporation. Plans for a pass on the Treforest Weir, also on the R. Taff, were passed to MAFF for approval. The pass on the Conwy Falls, which will be the longest in the U.K, was approved in principle by M.A.F.F.

Strict monitoring of the introduction of cyprinids was maintained to avoid the introduction of spring viraemia of carp, and only one water in Welsh Region has been implicated in the disease outbreak. Stocking of coarse fish has not been halted completely and the Authority participated in a number of restocking exercises. In one operation 4500 tench from Severn-Trent Region were released in South Wales.

Following a massive fish mortality in December 1987 on the Rivers Llynfi and Ogmere, a project group was convened to co-ordinate the rehabilitation of fish populations. A four year programme has been instigated, involving the annual release of 35000 1+ salmon and 30000 1+ sea trout, along with continual monitoring and survey work and fish access improvements.

Juvenile salmon and sea trout are reared at three main culture units providing genetically compatible stocks to meet a prioritised programme of restocking. Two of these units were refurbished during the current year at a cost of £130K to meet present mitigation and restoration schemes. Planned annual production amounts to 310000 fry/0+ parr, 150000 S1/1+ parr and 65000 S2 smolts. In addition a number of restocking requirements in relation to fishkills and other schemes remain to be fulfilled and therefore the options for additional fish culture capacity are being investigated. The efficacy of current restocking practices is currently being investigated by tagging, trapping and survey techniques and measures to improve survival and return rates e.g. volitional release facilities, are being evaluated.

A joint project with Cardiff City Council on the River Taff Melingriffth feeder involved the felling of trees to improve light penetration, and the construction of groynes to increase physical habitat diversity for the benefit of fish communities.

4.4.4 Catch Data

The continuous low river flows discouraged salmon and sea trout from entering most rivers and angling catches were significantly smaller than in previous years. At the time of writing, full analysis of

catch returns has not been completed but initial results suggest that 5000 salmon and 12000 sea trout were taken in the rod fishery.

The commercial fishery also suffered, with approximately 4000 salmon and 5000 sea trout reported, compared with 5124 and 6799 respectively in the previous year.

Low water conditions also appeared to be responsible for reduced numbers of fish in the spawning streams. Sea trout spawning was probably less than 50% of the normal level.

4.4.5 Investigations

A wide range of investigations are routinely carried out within the Region to support fisheries management initiatives and impact assessments in relation to scheme promotion and pollution incidents. Longer term, strategic investigations include the Dee Stock Assessment Programme with the planned construction of a fish trap at Chester Weir in 1990, studies into the efficacy of juvenile salmon and sea trout stocking on the Conwy, Usk and Tawe, and the development of habitat assessment (HABSCORE) and analyses of habitat improvement strategies on spate rivers. Salmon and sea trout tracking studies on the Usk Estuary and Tywi catchment continued to provide valuable information on fish movements in relation to environmental variables. These investigations are of national strategic importance, the data enabling resources to be effectively targetted to areas of greatest effect in safeguarding and improving fisheries.

Over 50000 salmon and 25000 sea trout parr and smolts were microtagged and released into Welsh rivers. Adult recaptures last year from tagged fish released in previous years totalled 117 of which around 50% were recorded from distant water fisheries. Homewater recaptures were reduced compared to 1988, probably as a result of overall depressed catches due to the drought.

A total of 19 catchments and 400 sites were sampled as part of the juvenile salmonid monitoring programme. Data are being collated and compared with previous years' results to provide a comprehensive assessment of the distribution and abundance of fish populations and the quality of the freshwater environment. The implementation of a national juvenile salmonid monitoring programme was considered.

A number of tidal barrage schemes are under construction or active promotion in the Region, and these have implications for migratory fisheries. Construction of a tidal barrage on the River Tawe commenced in February 1989 incorporating a 'folded' pool and traverse fish pass, and fish trapping facilities. Negotiations for a programme of water quality and fisheries monitoring were begun with Swansea City Council, the barrage promoters.

The Cardiff Bay Barrage Bill, enabling construction of a total exclusion barrage across the Taff estuary, continued its progress through parliament. Detailed discussions were held with the promoters regarding fish passage and trapping facilities within the barrage, and a fisheries monitoring programme to include tracking, tagging and trapping studies will be funded by the promoter. A minimum level of mitigation will be implemented and funded by the barrage promoters, irrespective of whether any damage to fish stocks as a result of the barrage can be demonstrated .

The Severn Tidal Power Group reported to the Government on the Severn Barrage Development Project in 1989. Welsh Region was closely involved in these studies and a number of possible impacts upon fish stocks were identified. While the damage caused to fish as a result of passing through the turbines is of particular concern, there are a number of other uncertainties which require further study.

4.4.6 **Salmon Advisory Committee Visit**

The Government's Salmon Advisory Committee viewed various fisheries facilities within the Northern Division during a two day visit in September. A presentation on the Authority's fisheries, water quality and water resources activities was delivered by Regional and Divisional officers.

4.5 RECREATION

4.5.1 General

Within Welsh Region, Recreational issues are dealt with by staff who also have responsibility for Fisheries and Conservation. Much of the years work has been aimed at providing a firm basis on which to build future recreation initiatives, by evaluating the nature of the Region's recreational assets, and by establishing links with those principal agencies responsible for water related sport and recreation.

4.5.2 Recreation Seminar

In conjunction with the Sports Council for Wales, a seminar for NRA recreation staff and agencies representing a range of recreational interests was held in January 1990. Speakers included representatives of the Sports Council for Wales, Countryside Commission, and governing bodies of water related sports, as well as NRA staff. The seminar outlined how sport and recreation are organised and managed within the region, and established links at a Regional and local level with the relevant agencies. Topical issues such as access to water, conflict with other users and the environmental impact of recreational activities were discussed.

4.5.3 Inventory of Recreational Assets

The schedules of land transferred to the Region under the Water Act Scheme of Transfer have been screened to establish which land and holdings owned by the Region are currently used for recreation and/or have scope for further recreational development.

4.5.4 Canolfan Tryweryn National White Water Centre

The principal recreational asset inherited by the Region is the Canolfan Tryweryn National White Water Centre, situated on the Afon Tryweryn below Llyn Celyn dam. The Region regulates the discharge from the dam principally to support downstream abstractions and for flood control purposes, but with the spin off that high discharges create conditions suitable for international level white water canoeing on the purpose built slalom course attached to the Centre. Negotiations to transfer the lease of the site from the British Canoe Union to Meirionnydd District Council, with the Welsh Canoeing Association managing the site, have now been concluded and the new arrangements come into effect on April 1st 1990. Further discussions with the relevant parties will be held to explore means of developing the Centre further, whilst recognising the importance of the river for wildlife (see section 4.6.3 below).

4.5.5 The River Wye Project

The River Wye lies in an area of outstanding natural beauty, is of national conservation importance, supports one of the best salmon fisheries in England and Wales, and also provides extensive opportunities for other sports and forms of recreation. There is a public right of navigation on the lower river, and many problems arise from conflicting interests, noise and disturbance. In order to reconcile these problems, and to make proposals for improved utilisation of the resource, nine public bodies agreed to jointly fund a programme of investigation and the appointment of a Project Officer.

These bodies are:-

Countryside Commission	Gloucestershire County Council
National Rivers Authority	Gwent County Council
Nature Conservancy Council	Powys County Council
Sports Council for Wales	Hereford & Worcester County Council
West Midlands Sports Council	

The Project Officer took up his three year appointment in January 1990.

4.5.6 Canoeing and Disturbance to Spawning Fish

Following incidents when canoeists have been reluctant to leave river stretches at the request of NRA Bailiffs, guidelines are in preparation to assist both Bailiffs and canoeists in deciding whether canoeing can take place without causing disturbance to spawning fish. These guidelines will be discussed with the Welsh Canoeing Association and it is hoped they can be issued as a joint initiative.

4.6 CONSERVATION

4.6.1 General

The Conservation duties of the NRA were strengthened and widened by the Water Act, and DoE have produced a Code of Practice on Conservation, Access and Recreation to clarify the issues involved. Guidelines for the implementation of this Code have been drawn up by Welsh Region, and these are under discussion at national level, with a view to adoption as NRA policy. In the Divisions, impact assessment of proposed Flood Defence works, including the preparation of formal Environmental Statements under Statutory Instrument 1217 has continued to form a major part of the conservation workload.

4.6.2 Impact Assessment of Flood Defence Works

Over 100km of river were surveyed in order to assess the likely impact of proposed revenue works and to advise on environmentally sensitive working methods; In addition, environmental assessment was carried out for ten capital schemes.

With the Hawarden Embankment on the canalised section of the River Dee, work began to increase the height of a 600m section of the embankment at Queensferry. Reseeding with wildflower and grass seed mixtures, the excavation of ponds and scrapes and the enhancement of hedgerows were all implemented.

For the Solfach flood alleviation scheme in West Wales, a wildlife pond (surface area 1200m²) was incorporated into a 40,000m² flood storage area to provide a range of habitats for macrophytes and birds. Existing areas along the river bank were planted up with native trees and shrubs, and offset baffles were incorporated into the culverted section of the River Solfach to reduce stream velocity and assist fish migration.

4.6.3 Promotion of Conservation : Habitat Improvements

The Region is one of the major strongholds of the otter in Britain. After severe declines in the 1950's, there are signs that the Welsh population is starting to expand, and the Region has embarked on a programme of habitat improvement in selected catchments, notably the Usk and the Tryweryn. Remedial measures include the construction of stick-pile otter holts, the fencing of riverbanks and the planting of trees and shrubs.

On the River Rhymney, as in the majority of the South Wales Valley, industrial and urban developments and agricultural improvements have reduced the range of good aquatic habitats. With the agreement of landowners, ponds have been excavated, trees and shrubs planted and riparian woodlands fenced. The work was undertaken by the Flood Defence Department.

Landscaping works have been undertaken around Lake Bala. Work downstream of the lake, involving wetland enhancement, pool creation, fencing and treeplanting was implemented in March 1990 by Flood Defence staff; further work will be carried out during the year by an employment project group, "Drive for Youth", at minimal cost.

Work carried out at Ystumllyn marsh to further enhance wildfowl and wetland habitats on the SSSI has been continued by the Flood Defence Department, with the excavation of a 0.5ha pond, scrapes and river channel bays.

In the Tywi catchment, routine maintenance work was carried out on the River Gwili involving bank protection (using blockstone) and selective shoal removal. In the Loughor catchment, maintenance work was carried out on a 350m reach of the River Amman near Glanamman, to realign the river channel and prevent major bank erosion. Blockstone revetment was incorporated along one entire bank and crest and v-shaped weirs were constructed in-stream to stabilise the river bed and create fish habitat. Both schemes identified areas suitable for tree and shrub planting, and this option was pursued using sixteen native species, along with the erection of stock-proof fencing.

The fish holding capacity of the River Ystwyth near Llanilar is being improved by using blockstone in the main channel and bank to create a range of flow and depth characteristics. Over 550 trees and shrubs have been planted along the bank to provide shading for fish.

4.6.4 Kingfisher Survey

Bailiffs in West Wales have been monitoring kingfisher populations (location, numbers, nesting sites) of the major rivers and tributaries, in conjunction with the RSPB.

4.6.5 Archaeology Seminar

In May 1989 a seminar was arranged with archaeological agencies to examine the responsibilities of the Welsh Water Authority. As a result, it was agreed that for the NRA's activities, contact on archaeological matters would be with the County Trusts, who would also be invited to the annual conservation liaison meetings.

4.6.8 Afforestation Guidelines

A working group including the Countryside Commission, Nature Conservancy Council, and Royal Society for the Protection of Birds was set up by the Welsh Water Authority, to consider the nature and location of new forestry in Wales and the environmental impact of liming. The group's report was passed to Welsh Office and the Forestry Commission, for comment, at the end of March 1990.

4.6.9 Schools Project

Bailiffs in the Gower area have been liaising with junior schools, with a view to generating interest in the creation of school ponds, and in the "adoption" of local watercourses.

4.7 NAVIGATION

4.7.1 River Dee

The only area where the Region acts as the formal Navigation Authority is on a short stretch of the tidal R.Deer below Chester, which is principally used by commercial shipping. Current income is far short of the cost of maintaining the navigational aids required. The Region is looking into ways of transferring responsibility for day to day operation of the navigation, in terms of both maintenance of aids and collection of dues, to a suitable agent.

5. CROSS FUNCTIONAL AND SUPPORT SERVICES REVIEWS

5.1 Administration

- 5.1.1 The Section is responsible for providing and maintaining the essential support facilities to enable core activities to be undertaken. Services included the provision of a secretariat, house-keeping, communications, insurances and purchasing and tendering.
- 5.1.2 Ongoing reviews have taken place in respect of telecommunications, cleaning, catering and work practices. A call sequencing system has been installed at the St Mellons Headquarters which has improved the level of service to the public, and provided better management information on which to base future developments. Contract cleaning and catering has been introduced at several area locations. Software packages have been developed to assist with the production of directories, insurances and purchasing. The Section has introduced improved printing and finishing techniques to match the capability of the CEO system in producing reports of a professional quality.
- 5.1.3 A substantial element of the work early in the year, involved the organisation of the transfer of staff and equipment into the new Regional Headquarters at St Mellons, Cardiff, and other office transfers. The task was completed on time, with minimal disruption.

5.2 Legal Services

- 5.2.1 The Water Act received the Royal Assent in July 1989 with the bulk of the provisions coming into force on the 1st September. With the approval of Head Office, Mr William Howarth, a lecturer in Law at the University College of Wales, Aberystwyth was commissioned to produce a working guide to this legislation and "The Law of the National Rivers Authority" was published in January 1990. This will be used in training both legal staff, and those in the functional disciplines.

The Department had a substantial involvement in the negotiations and drafting requirements brought about by the Welsh Water Authority Scheme of Transfer. In many instances it was necessary to include options in leases etc., so that the division of the property could take place on the 1st September 1989. All existing problems have substantially been resolved, save for minor amendments required in relation to lists of vehicles and plant.

- 5.2.2 Regional Lawyers have had a detailed involvement during the passage of the Cardiff Bay Barrage Bill through both Houses of Parliament. Complex issues involving water quality and fisheries were resolved and amendments made to the original Bill. Expert evidence given to the House of Commons Committee in February is likely to significantly influence the Report Stage on the Bill which will take place in the beginning of April 1990.
- 5.2.3 Steps have been taken to streamline prosecutions by instituting proceedings within three months of the date of the alleged incident. Considerable progress has also been made towards establishing an integrated computerised pollution and fisheries management system.

5.3 Estates Management

- 5.3.1 The Estates Function is managed by the Regional Solicitors Department, using private valuers for professional advice in respect of acquisitions and disposals of land and settlement of compensation claims.
- 5.3.2 Considerable progress has been made in the last six months in establishing an integrated legal and estates computerised management system. The target date for implementation of the system is August 1990 and the framework is being devised by a team of "in house" Information Technology staff with support from the Legal Department.

5.4 Public and Media Relations

- 5.4.1 A successful launch of the Region took place in line with the National initiative. This event was further supported with a Regional video programme which has been used to introduce the work of the Welsh Region.
- 5.4.2 Other initiatives have taken place during the year, dealing with farm pollution, the fisheries service, the provision of an exhibitions unit and acid waters. Attention to this last subject has been given via a video programme and the launch of a book which reflects ten years of research into the effects of acid waters in Wales.
- 5.4.3 Effective relations with the media have been established.

5.5 Planning

- 5.5.1 There have been a number of important corporate planning initiatives in the last year which are essential to the management of the Region in setting priorities, timescales and resource allocation.

Service Strategies have been started for certain problems which must be resolved within particular time constraints such as:

Red List Reduction Programme
EC Bathing Waters Compliance
Deemed Consents

Functional Strategies are being developed to coordinate all aspects of a particular function across the Region and these will be an important part of the Corporate Planning process. A strategy for the Water Resources Function has already been completed.

Catchment Management Plans are being developed for six catchments within the Region -

Taff	Ely
Cleddau	Ogmore
Conwy	Dee Estuary

The Welsh Region is a lead Region in the development of Catchment Management Plans and has prepared detailed guidelines and examples to assist the development of national planning.

- 5.5.2 A computerised system for the administration of Town and Country Planning Consultations was operative in each Division, and liaison meetings were held prior to the 1st September with all Planning Authorities to appraise them of the NRA's responsibilities and requirements for consultation. A simple Developers Guide has also been produced, and this will be extensively circulated.

Agreement has been reached with Severn-Trent Region, for dealing with planning on a lead Region basis for those planning authorities which straddle the two Regions. Similar arrangements have been adopted for Divisions within the Region.

A Regional policy has been produced for dealing with developments in areas of inadequate sewerage, to ensure that current pollution problems are not exacerbated.

5.6 Research and Development

- 5.6.1 In the Llyn Brienne Project on upland acidification, investigations into acidification processes and the efficacy of liming treatments have continued. Biological responses to given reductions in atmospheric pollutant loads have been modelled, and a major book drawing together the Project's main findings to date has been published ("Acid Waters in Wales", eds Edwards, R.W., Gee, A.S. and Stoner, J.H.).

- 5.6.2 The fish tracking studies on the Rivers Tywi and Usk have yielded valuable information on the movement of salmon, and sea-trout, in relation to river flow. Agricultural pollution effects have continued to be monitored in an intensive dairy farming area in Pembrokeshire, and this work will be extended to include other farming practices elsewhere. The effect of pesticide use on river ecology has continued to be examined at the Rosemaund Farm in the Frome catchment (River Wye). The major investigation into combined sewer overflow impacts on receiving water chemistry and biota is nearing completion and will shortly be reported.

5.7 Information Systems

- 5.7.1 The year commenced with the rapid adaptation and implementation of all the key hardware, software and communication systems necessary for the successful operation of the Welsh Region. This included the commissioning of a minicomputer at the Regional headquarters and adapting existing minicomputers at the laboratory sites. As resources allowed, communications were improved to allow Users at all significant sites to access operational systems, and great emphasis was placed on the successful establishment of a Regional Office Automation system (CEO).

- 5.7.2 Mainframe (water quality and quantity archive) and other services (financial systems) supplied under contract by Welsh Water Plc have been monitored closely for cost-effectiveness and standards of service.

- 5.7.3 The IT Department was successfully restructured in September to reflect the Users' needs in terms of operational support, coordination and development requirements. Emphasis has been placed on planning and implementing machine and system improvements (to cope

with increased use and additional facilities). Good communications with the User have been given high priority with the setting up of an IT Service Desk, Divisional User Group meetings and regular liaison meetings with Departmental Heads.

- 5.7.4 Some 15 significant software developments, requested by individual departments, have been progressed to varying stages. These include improvements to existing systems of national importance (eg the MENSAR laboratory system) and other systems such as a fisheries and pollution prosecutions system, an eel licensing system, flood defence work planning and maintenance systems and a comprehensive abstraction management and billing system.

5.8 Personnel

- 5.8.1 Personnel practices have been established for the Region enabling effective formal and informal employee communications to take place. An open and participative management style has continued to operate with encouragement from senior management. Targets for recruitment, training priorities, productivity measures and health and safety have been met; in respect of the latter, the Regional Safety Policy has been used as a model for the Authority as a whole.

5.9 Finance

- 5.9.1 The initial objective was the creation of a "stand alone" Finance function for the Rivers Division of Welsh Water to operate from 1st April 1989. This was achieved and the necessary systems set up to provide the basic financial services of payroll, creditor payments, banking, accounting, income billing and collection.

In the period up to vesting it was necessary to agree the transfer of assets and the various balances between NRA and Welsh Water Plc including the completion of a Funds Flow Statement and Interim Accounts for the period 1st April to 31st August 1989.

Systems have been set up to provide a limited amount of management and budgetary information to Regional Management and the supply of various financial information to NRA Head Office, including Corporate Plans, Quarterly Accounts and Cash Flow.

Where appropriate, Welsh Water computer systems have continued to be used under an Agency arrangement as an interim measure pending the resolution/development of the NRA Informations Systems Strategy. However, the emerging requirements for additional financial and management information including quarterly accounts, greater emphasis on cash flow management, dual costing over Services/Budget Managers, and development and implementation of new sources of income highlight the deficiencies of our current systems, and the need for significant development and resources.

6. APPENDICES

6.1 Regional Committee Chairmen and Members

6.1.1 Regional Advisory Board (RAB)

Chairman	Professor R W Edwards
Regional General Manager	Dr J H Stoner
RRAC Chairman	Professor M Bruton
RFAC Chairman	Lord Moran
RFDC Chairman	Major H R Jackson
	Mr M A McLaggan (Designate)

6.1.2 Regional Rivers Advisory Committee (RRAC)

Chairman	Professor M Bruton
RFAC Nominee	Mr M J Morgan
RFDC Nominee	Mr W N Waters
Agriculture	Mr B Thomas (NFU)
	Mr H Lewis (FUW)
Forestry	Mr W Walker
County Councils	Cllr. W E Conway (Clwyd)
	Cllr. E K Griffiths (Gwent)
	Cllr. J N Hereford (Hereford & Worcester)
District Councils	Cllr. J D A Thompson (Welsh Assn. of District Councils)
	Cllr. G Jones (Dyfed)
Community, Town & Parish Councils	Cllr. J R Evans (Dyfed)
Industry	Dr A O'Connor (CBI)
	Dr M P Brooker (Welsh Water Plc)
Conservation/Landscape	Mr M Fitton (Countryside Commission)
	Mr R Lovegrove (RSPB)
	Dr N Caldwell (CPRW)
	Mr H Williams (NCC)
	Mr K Mascetti (National Parks)
Other Interests	Dr W R Howells (IFM)
	Mr L E Taylor (Water & Environment Consultant)
	Dr N Bolton (Sports Council)
	Mrs C Hayward (Welsh Canoeing Assoc)
	Professor J Simpson (UCNW Bangor)

6.1.3 Regional Fisheries Advisory Committee (RFAC)

During the period under review, this Committee was reconstituted. Those Members indicated "*" joined the Committee in October 1989.

Chairman	Lord Moran
RFDC Nominee	Mr M A McLaggan *
RRAC Nominee	Dr W Roscoe Howells *
Welsh Salmon & Trout Angling Assoc.	Mr M J Morgan
Welsh Federation of Coarse Anglers	Mr J Mayers
South Wales Sea Fisheries Committee	Mr J Rhydderch *
National Federation of Fishermen's Organisations	Mr W Hardy

Institute of Fisheries Management	Mr R I Millichamp
Wye Salmon Fishery Owners' Assoc.	Mr I Edwards-Jones
Gower Area Fishery Interest	Mr M Matthews
Riparian Owners	Col. P C Ormrod
United Usk Fishermen's Assoc.	Vice Admiral Sir Iwan Raikes
Dee & Clwyd Area Fishery Interest	Mr M F Johnston *
Gwynedd Area Fishery Interest	Mr W J Williams
Fish Farming	Mrs J Spence
North Western & North Wales Sea Fisheries Committee	Dr J Fish
South West Wales Area Fishery Interest	Mr G Roberts
Glamorgan Area Fishery Interest	Mr A Rees *

The following Members served on the Committee until July 1989:-

Chairman	Mr G Edwards
RFDC Nominee	Major H R Jackson
South Wales Sea Fisheries Committee	Mr C V Wareham
Dee & Clwyd Local Consumer Advisory Committee	Mr F Lamb
Taff Local Consumer Advisory Committee	Mr H Gwynne

6.1.4 Regional Flood Defence Committee (RFDC)

Secretary of State's Appointees

Regional Chairman	Major H R Jackson
Dee & Clwyd LFDC Chairman	Mr J W Hughes
Glamorgan LFDC Chairman	Mr M A McLaggan
Gwynedd LFDC Chairman	Mr R ap Simon Jones
South West Wales LFDC Chairman	Mr P J Perkins
Usk LFDC Chairman	Mr W N Waters
Wye LFDC Chairman	Mr L T Chase

Representing County Councils

Cheshire	Cllr. J T Humphreys
Clwyd	Cllr. B Huxley
Dyfed	Cllr. D J Thomas
Gwent	Cllr. E K Griffiths
Gwynedd	Cllr. M L Vaughan
Hereford & Worcester	Cllr. H Cotterell
Mid Glamorgan	Cllr. R W M Jenkins
Powys	Cllr. J T H Davies
South Glamorgan	Cllr. C V Watkins
West Glamorgan	Cllr. F C Evans
RRAC Nominee	Cllr. J D A Thompson
RFAC Nominee	Mr R I Millichamp

6.2 Senior Officers and Professional Advisers

Dr J H Stoner - Regional General Manager
Mr W J Ayton - Regional Fish.Consv.& Recr.Officer
Dr A S Gee - Regional Planning Manager
Mr W Griffiths - Regional Finance and Administration Manager
Mr K F T Goodley - Regional Personnel Manager
Mr C F Martin - Regional Solicitor
Mr D G Walker - Regional Environment & Quality Manager
Mr T J Widnall - Regional Flood Defence Manager

6.3 Selected Activity and Performance Statistics

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6.4 Authority Publications and Publicity Material

AS NATURE INTENDED - 13 minute video, mastered on High Band, copies VHS, English and Welsh editions. Introducing work and aims of NRA in Welsh Region.

GUARDIANS OF THE WATER ENVIRONMENT - 4 colour 8 page A4 bilingual. Duties and regional character, general policies.

CLEAN RIVERS CUP - 1 colour 4 page A4 bilingual. Invitation, rules and entry form for anti-pollution competition.

SILAGE IS DEADLY - 2 colour 2 page A4 bilingual. Farm waste information and warnings.

OIL, CHEMICALS AND PESTICIDES - 2 colour 2 page A4 bilingual. Pollution warnings and contacts.

Display Material: (All to fit A0 landscape MH Multiscreen units)

NRA WELSH REGION - 8 panels with headers, bilingual. General duties and aims.

IS YOUR FARM POLLUTION PROOF? - 4 panels with headers, bilingual. Warnings on silage and slurry handling, and contacts.

THE RIVER LLYNFI - 4 panels, bilingual. Follows a major pollution, compensation case and river restoration programme.

Fisheries Service

ROD FISHING BYELAWS - 2 colour 10 page 1/3-A4. (Welsh edition in preparation).

BUYER BEWARE OF POACHED SALMON - 2 colour 10 page 1/3-A4 bilingual. Recognition of illegally taken fish and warning of Salmon Act 1986 controls.

REWARDS FOR TAGGED FISH - 2 colour 6 page 1/3-A4 bilingual. Fisheries research programme support.

ANGLING INFORMATION 1990 - 2 colour 14 page 1/3-A4 bilingual. Charges, facilities, contracts etc.

GLAS-Y-DORLAN/KINGFISHER - Twice yearly 8-12 page tabloid newspaper, 4 colour outside and centre. News for anglers and conservation interests.

Environmental Appraisal Unit

LLYN BRIANNE ACID WATERS PROJECT - 4 colour 4 page A4. Background, methods and findings summary.

ACID WATERS IN WALES - 20 minute video, mastered on High Band, copies VHS, Background methods and findings summary.

6.5 Research Contracts and Publications

6.5.1 Research Contracts

A long term project, funded by the Welsh Office, has been undertaken on the Conwy Estuary to establish the impact of the construction of a tunnel to complete the A55 North Wales Expressway. The study seeks to identify the impact of construction on water quality and related issues such as bench levels and granulometric composition, shellfish quality and the important migratory fishery. The project costs £82k per annum, and employs an equivalent of 4.25 staff.

The Llyn Brienne Project, financed by the Department of the Environment/Welsh Office, was set up to ascertain the processes responsible for acidification in the uplands, and to evaluate potential remedial techniques such as liming. The contract has been worth £595k from its inception in 1984 up until April 1990, and funding for 1990/91 has been set at £77k. Three temporary staff are employed directly on the contract, with a further three employed by the principal sub-contractor, the University of Wales.

6.5.2 Publications

Aprahamian, M.W. (1989). the diet of juvenile and adult twaite shad Alosa fallax fallax (Lacepede) from the rivers Severn and Wye (Britain). *Hydrobiologia* 179: 173-182.

Aprahamian, M.W., Strange, C.D. and Dimond, C. (1989). Movement of adult Atlantic salmon (salmo salar) in the Usk estuary. Atlantic Salmon Trust Workshop on Fish Movement in Relation to Freshwater Flow and Quality, April 1989.

Clarke, D.R.C. and Purvis, W.K. (1989). Migration of Atlantic salmon in the River Tywi system, South Wales. Atlantic Salmon Trust Workshop on Fish Movement in Relation to Freshwater Flow and Quality, April 1989.

Cresswell, R.C. (1989). Conservation and Management of brown trout (Salmo trutta) stocks in Wales by the Welsh Water Authority. *Freshwater Biology* 21, 111-123

Cresswell, R.C. (1989). The fisheries resource: Management controls in England and Wales. Proceedings of the Royal Irish Academy in Irish Rivers: Biology and Management.

Donald, A.P. and Stoner, J.H. (1989). The quality of atmospheric deposition in Wales. Archives of Environmental Contamination and Toxicology 18: 109-119.

Edwards, R.W., Gee, A.S. and Stoner, J.H. (1990). Acid Waters in Wales. Kluwer, 337 pp.

Edwards, R.W. and Howell, R. (1989). Welsh rivers and reservoirs: management for wildlife conservation. Regulated rivers: Research and Management 4: 213-223.

Gee, A.S. and Stoner, J.H. (1989). A review of the causes and effects of acidification of surface waters in Wales and potential mitigation techniques. Archives of Environmental Contamination and Toxicology 18: 121-130.

Ormerod, S.J., Donald, A.P. and Brown, S.J. (1989). The influence of plantation forestry on the pH and aluminium concentration of upland Welsh streams: a re-examination. Environmental Pollution 62: 47-62.

Strange, C.D., Aprahamian, M.W. and Winstone, A.J. (1989). The assessment of a semi-quantitative electric fishing sampling technique for juvenile Atlantic salmon (Salmo salar L.) and trout (S. trutta L.) in small streams. Agriculture and Fisheries Management 20: 485-492.

Thomas D.K., Brown, S.J. and Harrington, D.W. (1989). Screening at marine outfall headworks. Journal of the Institution of Water and Environmental Management 3: 533-547.

Thomas, D.K. and Harrington, D.W. (1989). Users guide - preliminary treatment for marine outfalls. Welsh Water Authority/WRC, August 1989.

Wyatt, R.J. (1988). The cause of extreme year class variation in a population of roach, Rutilus rutilus L., from a eutrophic lake in southern England. J. Fish Biol., 32, 409 - 421.

Wyatt, R.J. and Kennedy, C.R. (1989). The effects of a change in the growth rate of roach, Rutilus rutilus (L.), on the biology of the fish tapeworm Ligula intestinalis (L.). J. Fish Biol., 33, 45 - 57.