HYDROLOGICAL SUMMARY FOR GREAT BRITAIN FEBRUARY 1991

Data for this report have been provided principally by the regional divisions of the National Rivers Authority in England and Wales, the River Purification Boards in Scotland and by the Meteorological Office. The recent areal rainfall figures are derived from a restricted network of rain gauges (particularly in Scotland) and a proportion of the river flow data is of a provisional nature. Reservoir contents information for England and Wales has been supplied by the Water Services Companies.

A map (Figure 5) is provided to assist in the location of monitoring sites.

Summary

Whilst the range of weather conditions experienced in February was certainly unusual, rainfall and temperatures were much closer to the normal than in 1989 or 1990. For all regions - but not all areas - rainfall over the winter half-year (thus far) has been well within the normal range. Precipitation since the beginning of October has served to terminate, or greatly ameliorate, drought conditions throughout much of northern and western England; a particularly brisk decline in drought severity has occurred, since mid-December, in Yorkshire.

By contrast the dry soils and depressed water-tables in lowland England - a legacy of the 1990 drought - has robbed the winter rainfall of much of its hydrological effectiveness and the much delayed seasonal recoveries in runoff and recharge rates, first signalled at the turn of the year, have been patchy and relatively sluggish. A significant hydrological drought still embraces large areas of the English lowlands with severity broadly increasing in a south-easterly direction. February runoff rates were amongst the lowest on record throughout a substantial proportion of East Anglia, the Thames Valley and in other parts of southern England but the fragility of the water resources outlook is most evident in relation to groundwater levels. Long-term rainfall deficiencies - which are the key to the existing hydrological conditions - are greatest in those regions of England principally dependent on groundwater supplies. A water-table recovery is underway in almost all areas but, as a result of the exceptionally low base from which the upturns needed to be generated, levels remain very depressed in much of lowland England especially so in a zone from Kent to Lincolnshire.

The drought has entered a crucial phase. With soils at, or close to, saturation there is considerable scope for further improvements in water resources through and beyond the current unsettled spell. Nonetheless, even with average rainfall in March and April groundwater levels in eastern England will fall well short of the normal spring peak and baseflow contributions to summer and autumn river flows may be expected to be limited for the third successive year. However, sustained spring rainfall resulting in an extension of the recharge season - as happened, for instance, in 1989 - would be especially beneficial and help to allay concern regarding the water resources outlook for the summer and autumn of 1991.

Rainfall

February was a month of exceptionally varied weather conditions. A persistent anticyclone centred over Scandinavia increasingly dominated weather patterns early in the month and the associated easterly airstream brought substantial snowfall in mid-month accompanied by extreme cold. A gentle thaw ensued as a more westerly, or south-westerly, airstream became established bringing mild, damp conditions to much of Britain.

Notwithstanding the unsettled pattern of the weather, the Great Britain rainfall total for February was below average, albeit marginally. The relatively high proportion of precipitation falling as snow, and the showery nature of much of the rainfall especially in the latter half of the month, made for difficulties in accurately assessing areal totals. Nonetheless, it is clear that local and regional variations in rainfall totals were substantial especially in southern England. Only around half the February mean was registered in parts of Dorset and Kent. Modest precipitation totals were also found in the southern Pennines and parts of western Scotland. By contrast much of north-eastern Britain was very wet.

Accumulated precipitation totals for the winter half-year for all regions of Great Britain are well within the normal range. Provisional data indicate that only the Thames and Wessex regions have shortfalls exceeding 10 per cent. But some districts in adjacent regions - Anglian especially - have also been relatively dry; where, as in parts of Lincolnshire and Cambridgeshire, winter rainfall of only around three-quarters of the average has reinforced a long term deficiency, the current drought is particularly severe.

In many regions winter rainfall substantially above the long-term mean was required to make good deficiencies built up over the spring and summer of 1990. Thus within the 12-month, and longer, timeframes notable droughts may still be recognised. The March 1990-February 1991 rainfall total for England and Wales is, with the exception of 1933/34, the lowest for over 100 years. The percentage deficiencies in this timeframe are far from uniform. There is a distinct regional pattern to the drought; the return periods given in Table 2 testify to substantial meteorological droughts in Wessex, the South-East and East Anglia where local variations in severity are also considerable - a zone of particular drought intensity may be traced from north of London to beyond the Wash. Rainfall for each of the last 12 months has been below average in the Anglian region as a whole and over the Thames catchment, the 12-month rainfall total is the lowest (for the March-February period), by an appreciable margin, in a record extending back to 1883. Long-term rainfall deficiencies extend beyond lowland England with many areas, including central Wales, registering only 5 or 6 months with above average rainfall since May 1989. In western Britain the summers of 1989 and 1990 were dry but deficiencies in some parts of the east have embraced the last three winters also with substantial implications for runoff and recharge (see below).

Evaporation and Soil Moisture Deficits

February was the coldest month for at least four years throughout much of Great Britain with some notably low daytime temperatures early in the month. Sunshine amounts were also mostly below average. Consequently evaporative losses - normally very modest in February anyway - were generally below average. Accumulated evaporation losses reflect the very warm and sunny conditions which have been a feature of the weather for much of the last three years. Winter (from October 1st) Potential Evaporation (PE) and Actual Evaporation (AE) totals were close to the highest on record (in the MORECS series from 1961) in much of the English lowlands and parts of the North-East but around the average elsewhere. Over the last 12 months calculated PE losses have also been exceptionally high (although generally lower than 1989/90) but due to sustained high soil moisture deficits (SMDs), AE losses in much of southern Britain were the lowest on record with the exception of 1975/76.

Soils throughout Great Britain were at, or very close to, field capacity at the end of February. The elimination of the residual deficits (mostly in East Anglia) will allow infiltration to recommence in some districts for the first time in about a year.

Runoff

Runoff totals for February showed a significant decline from the January rates over large parts of western and northern Britain but with the exception of south-west England and rivers draining from the Highlands of Scotland, flows were close to, or above, the seasonal average. In the English lowlands, flows generally declined only moderately but February runoff totals in permeable catchments were among the lowest on record albeit normally well above those registered in February 1976 (often 1973 and 1965 also).

A relatively gentle thaw from mid-month resulted in a few isolated flood alerts (e.g. in the East Midlands) but heavy rainfall in the Welsh mountains on the 22nd - exceeding 100 mm in some localities - caused very brisk runoff increases in the headwaters of the Severn and a number of other rivers. Elsewhere bankfull, or above, flow rates were largely confined to northern England and the Borders. Spate conditions were experienced in parts of Northumbria and North Yorkshire late in the month; severe flooding was reported in the Ure Valley following rainfall totals exceeding 200 mm over 48 hours in the headwaters. Provisional data suggest that the peak flow - on the 24th - at Westwick Lock on the Ure exceeded 600 cumecs, the highest flow in a 33-year record.

In contrast to the winter rainfall, runoff accumulations - apart from some western and northern catchments - over the period from October 1st are well below average; a consequence largely of the dry autumn soils and, in the lowlands, the moderate baseflow contribution. Low to very low runoff accumulations, for a wide range of durations, characterise many catchments in eastern and southern England. Some rivers sustained principally by groundwater have remained below average for 28 or more consecutive months (examples include the Lud and the Witham) and the overall runoff deficiency is unprecedented for many gauging stations commissioned over the last 15 years. Where longer historical data series are available the long-term deficiencies (for instance over 22 and 31 months) are often comparable with, but rather less than, the most severe drought sequence over the period 1972-4 or 1963-65.

Although significantly less than in late December and in January, further reservoir replenishment occurred through February and, by early March most reservoirs were close to, or at, capacity in the west and north of Britain. In Wales, for instance, the Vyrnwy and Clywedog Reservoirs were full and the combined storages in the major South Wales impoundments exceeded 90% of capacity around month-end. The upturn in runoff rates from mid-December also facilitated very healthy inflows to some pumped storage reservoirs in the lowlands (for example in the Thames Valley where the contrast between surface and groundwater resources is very marked - see below). In parts of East Anglia and southern England, stocks in a number of important reservoirs remain well below the seasonal average.

Groundwater

February precipitation was below average over most southern and central aquifer units. Where above average rainfall was registered in the east, residual soil moisture deficits often limited infiltration especially early in the month. Nonetheless, a belated recovery in groundwater levels is underway in almost all areas; the snowmelt around mid-month provided a useful impetus with upturns continuing during the mild unsettled spell over the last fortnight.

In most aquifers in the western half of the country groundwater levels are within the normal range - see, for instance, the hydrographs for Ashton Farm, West Woodyates and Bussels. Within-region variations are considerable and, following a decline during February, levels in a number of observation boreholes in Wales and the South-West were approaching their winter minimum. Some healthy increases in level have been recorded in parts of the Chalk outcrop also. At Dalton Holme (Humberside) and Little Bucket (Kent) the water-table remains well below average but by early March, levels had reached their highest for over two years. The recovery in Kent has, thus far, been both limited and patchy and to the north, levels in the Chalk - from the Chilterns to Lincolnshire - remain exceptionally low. At Little Brocklesby, Washpit Farm and Fairfields, each having records which include the 1976 drought, levels are close to or below the February minimum and close to the lowest recorded for any month. At these sites, as elsewhere in eastern England, the depressed groundwater levels reflect not simply the limited infiltration so far over the 1990/91 winter but the modest recharge during the preceding two winters also. In some districts the steep natural decline in the water-table through the summers of 1989 and 1990 was exacerbated by substantial groundwater abstraction.

The prediction in the January Hydrological Summary that around 150% of average precipitation would be required through until the end of March to restore groundwater levels to near-average early April levels still holds good for southern and eastern England. In these districts, water-tables still have a long way to rise to the mean peak values at the start of the summer recession. The abrupt termination of recharge at the beginning of the spring last year was a major factor heralding the exceptionally low groundwater levels later in the year. Further persistent rainfall this year - forestalling the onset of the seasonal decline - is essential to avoid a further period of low water-tables and much reduced spring flows.

IH/BGS 13.03.91

TABLE 1 1990/91 RAINFALL AS A PERCENTAGE OF THE 1941-70 AVERAGE

		Feb 1990	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan 1991	Feb 1991
England and	mm	142	23	38	25	72	35	45	50	100	65	97	86	55
Wales	%	219	39	66	37	118	47	50	60	120	67	108	100	84
NRA REGIONS														
North West	mm	193	45	57	49	99	58	68	81	164	68	142	95	95
	%	238	63	74	60	119	56	54	66	139	56	118	84	117
Northumbria	mm	135	32	25	51	69	40	53	53	106	61	109	68	92
	%	205	62	45	80	113	52	52	66	141	65	145	85	140
Severn Trent	mm	109	18	30	19	63	27	37	47	93	52	92	72	45
	%	206	35	58	30	113	42	46	70	143	66	131	105	84
Yorkshire	mm	112	23	25	29	83	32	46	39	92	55	121	72	78
	%	175	43	45	48	143	46	51	54	133	62	163	94	123
Anglia	mm	75	15	34	16	45	21	31	32	51	52	48	43	40
	%	179	38	85	34	92	37	48	62	98	84	91	83	96
Thames	mm	114	12	35	7	47	17	35	34	59	34	65	77	36
	%	242	26	76	13	90	28	50	55	91	47	99	124	77
Southern	mm	136	6	48	10	61	13	33	38	105	59	63	94	37
	%	237	12	100	18	122	22	45	54	135	63	77	123	65
Wessex	mm	158	14	35	12	62	31	41	48	87	52	74	108	37
	%	268	24	65	18	115	50	50	61	106	54	83	128	63
South West	mm	238	25	46	25	99	61	59	68	126	107	112	137	71
	%	264	30	65	30	152	73	58	65	112	80	83	106	79
Welsh	mm	215	37	48	34	98	53	65	85	149	109	152	139	84
	%	224	43	56	37	120	56	55	68	116	76	105	102	87
Scotland	mm	294	247	96	54	128	75	119	147	211	101	184	135	102
	%	283	268	107	59	139	67	92	107	142	71	108	99	98
RIVER PURIFICATION BOARDS														
Highland	mm	365	409	136	54	140	95	157	230	220	144	221	180	100
	%	274	359	119	52	127	75	106	146	118	85	113	110	75
North-East	mm	149	87	45	49	110	47	79	85	138	94	88	72	93
	%	201	140	74	64	157	51	74	98	142	91	86	79	126
Tay	mm	287	178	61	44	128	39	74	67	187	65	140	132	124
	%	288	217	81	46	154	38	63	58	153	55	104	112	135
Forth	mm	222	142	55	39	125	51	81	65	185	57	131	106	112
	%	288	206	81	46	167	52	70	60	175	53	120	107	145
Tweed	mm	178	52	31	46	106	54	61	68	159	52	114	98	117
	%	258	90	51	61	156	61	54	73	181	50	127	105	170
Solway	mm	285	94	72	76	121	75	105	81	216	79	208	143	112
	%	306	103	82	83	134	68	82	54	150	54	138	102	120
Clyde	mm	341	295	127	57	138	95	149	173	297	90	190	148	102
	%	302	281	123	59	134	73	105	99	162	54	102	92	90

Note: The recent monthly rainfall figures are based are based upon MORECS data supplied by the Meteorological Office. Earlier areal figures are derived from a far denser raingauge network.
Scottish RPB data for February 1991 were estimated from the monthly isohyetal map provided with the MORECS bulletins.

TABLE 2 RAINFALL RETURN PERIOD ESTIMATES

		OCT 90 - FEB 91	Est Return Period, years	MAR 90 - FEB 91	Est Return Period, years	MAY 89 - FEB 91	Est Return Period, years	AUG 88 - FEB 91	Est Return Period, years
England and	mm	402		690		1470		2113	
Wales	% LTA	95	2-5	76	30-40	86	10-20	87	10-20
NRA REGIONS									
North West	mm	564		1021		2037		3047	
	% LTA	102	2-5	84	5-10	89	5-10	94	2-5
Northumbria	mm	436		759		1376		1975	
	% LTA	112	2-5	86	5-10	83	20-30	85	20-30
Severn Trent	mm	354		595		1279		1784	
	% LTA	105	2-5	77	15-25	89	5-10	88	10
Yorkshire	mm	419		696		1338		1922	
	% LTA	112	2-5	84	5-10	86	10-15	87	10-20
Anglia	mm	235		429		907		1286	
	% LTA	90	2-5	70	50-70	80	25-35	80	60-80
Thames	mm	271		458		1069		1518	
	% LTA	87	2-5	65	80-120	81	15-30	82	30-50
Southern	mm	358		567		1235		1718	
	% LTA	93	2-5	71	25-35	83	10-20	81	40-60
Wessex	mm	358		601		1389		1978	
	% LTA	87	2-5	69	40-60	85	5-15	86	10-20
South West	mm	553		936		2065		2941	
	% LTA	92	2-5	78	10-20	92	2-5	92	5
Welsh	mm	633		969		2205		3226	
	% LTA	98	<2	78	15-20	92	2-5	93	2-5
Scotland	mm	733		1599		2945		4380	
	% LTA	106	2-5	112	5-10	110	5-15	115	60-80
RIVER PURIFICATION BOARDS									
Highland	mm	873		2094		3761		5630	
	% LTA	103	2-5	122	20-40	117	40-60	112	>>200
North-East	mm	470		972		1679		2423	
	% LTA	101	<2	95	2-5	87	10-20	90	5-15
Tay	mm	676		1267		2419		3631	
	% LTA	116	2-5	101	2	103	2-5	109	5-10
Forth	mm	611		1169		2183		3206	
	% LTA	122	5-10	105	2-5	104	2-5	108	5-10
Tweed	mm	583		1001		1799		2522	
	% LTA	131	10-20	100	<2	95	2-5	95	2-5
Solway	mm	736		1360		2623		3939	
	% LTA	109	2-5	95	2-5	98	2-5	104	2-5
Clyde	mm	893		1927		3579		5297	
	% LTA	110	2-5	116	10-15	115	15-30	119	60-80

Return period assessments are based on tables provided by the Meteorological Office*. These assume a start in a given month; return periods for a start in any month will be very substantially lower. "Wet" return periods underlined.
The tables reflect rainfall totals over the period 1911-70 only and the estimate assumes a sensibly stable climate.
The February 1991 RPB values are estimated from the isopleth map within the February summary published in the Met. Office's MORECS bulletin. February figures for England and Wales are based on MORECS figures.

* Tabony, R C, 1977, The Variability of long duration rainfall over Great Britain, Scientific Paper No. 37, Meteorological Office (HMSO)

FIGURE 1. MONTHLY RAINFALL FOR 1990-1991 AS A PERCENTAGE OF THE 1941-1970 AVERAGE

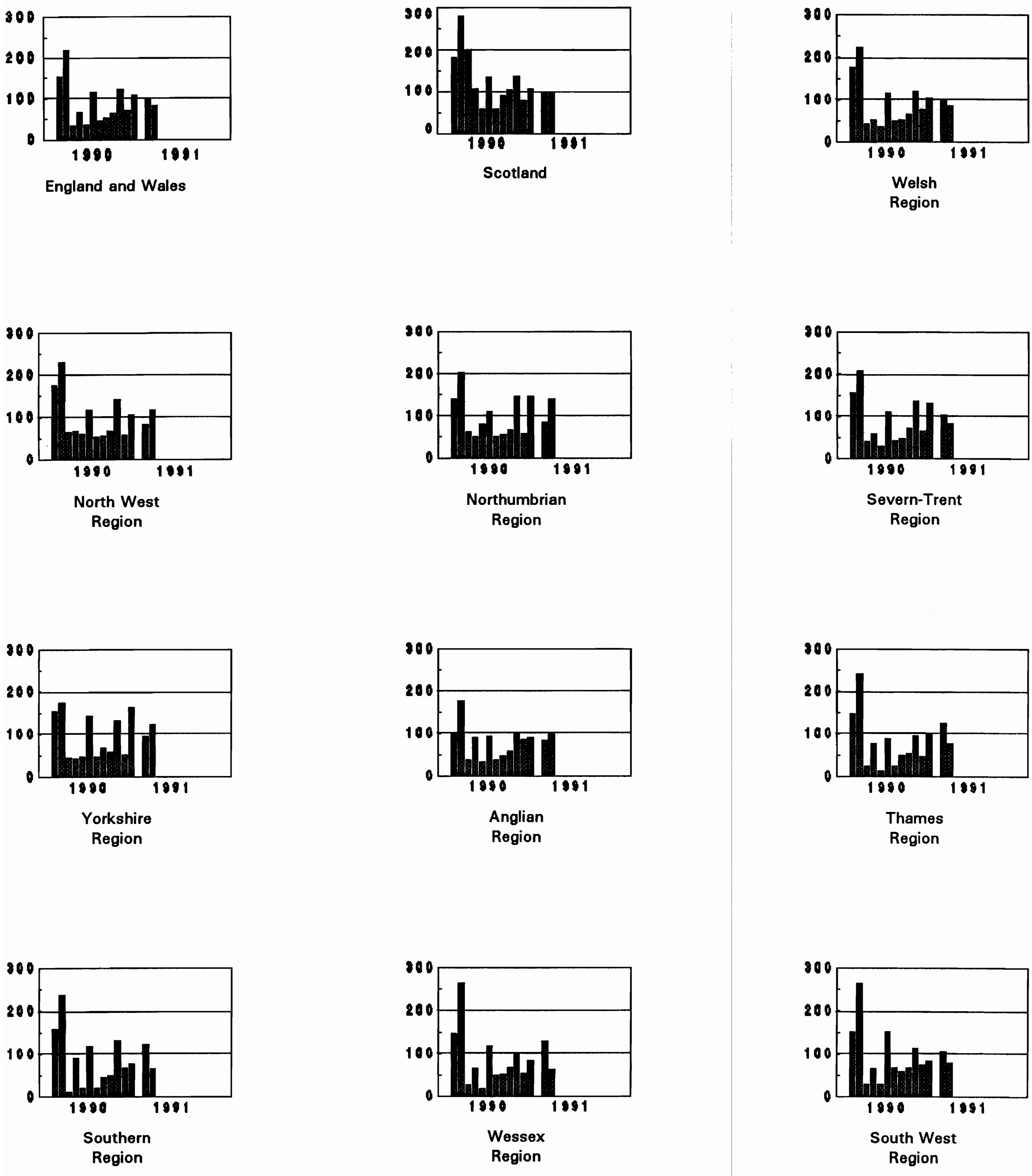
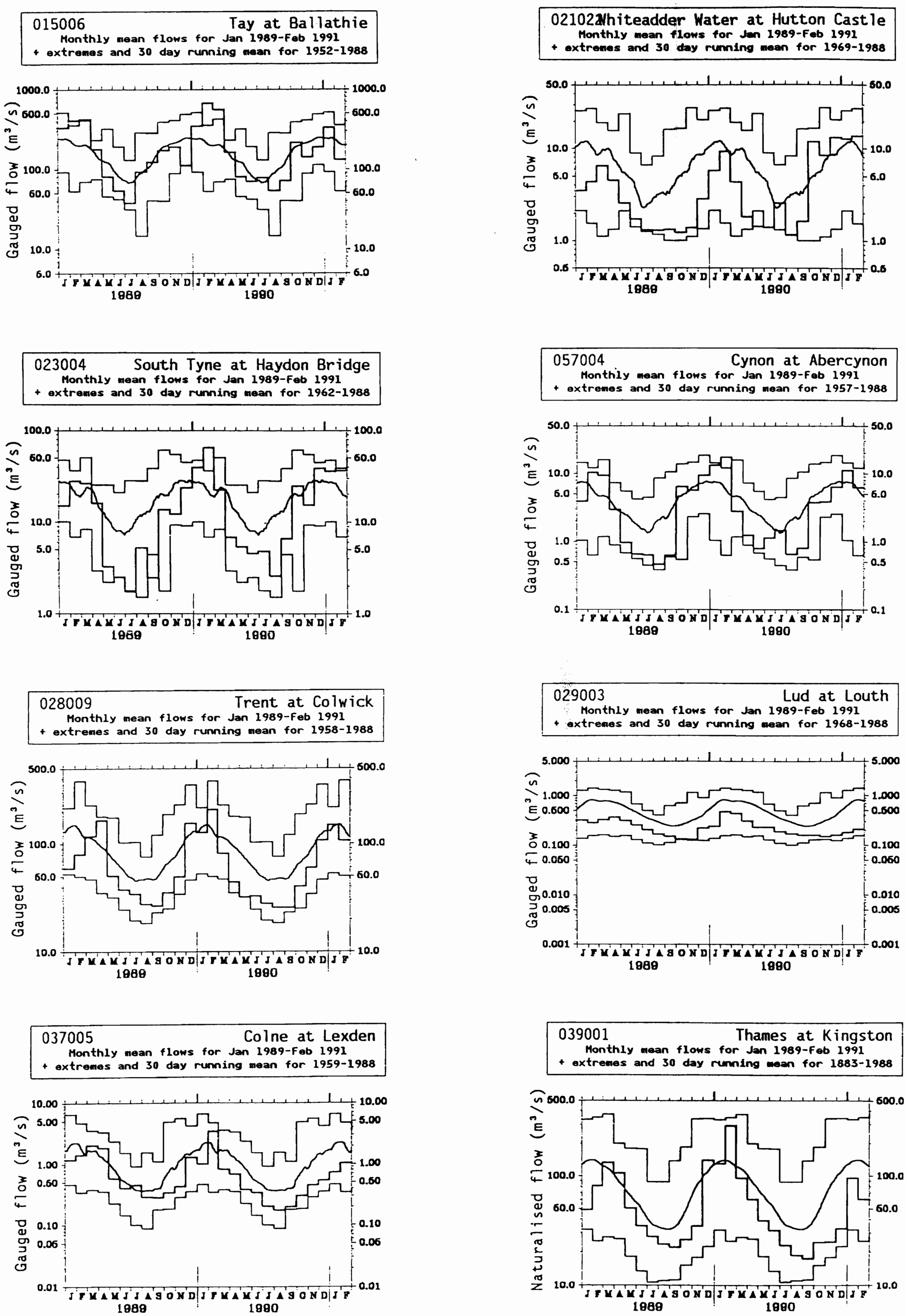
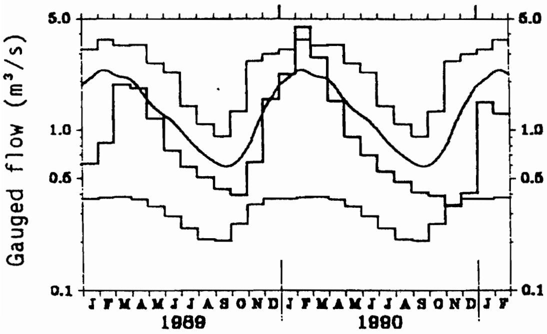


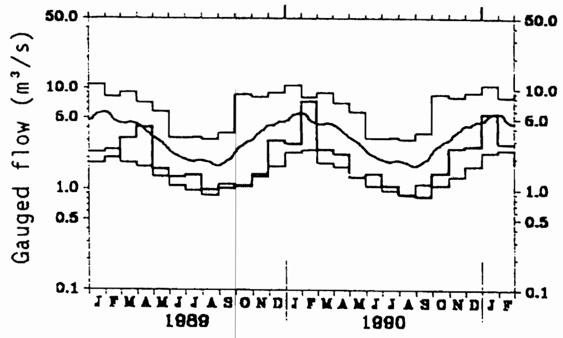
FIGURE 2 MONTHLY RIVER FLOW HYDROGRAPHS



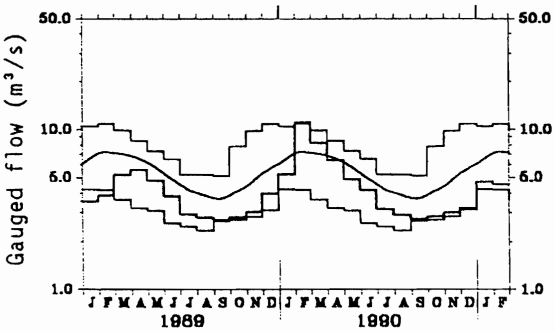
039020 Coln at Bibury
Monthly mean flows for Jan 1989-Feb 1991
+ extremes and 30 day running mean for 1963-1988



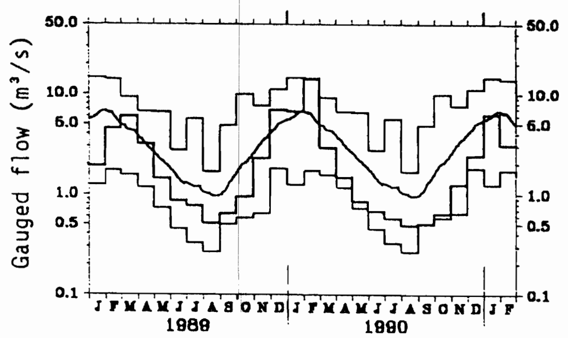
040011 Great Stour at Horton
Monthly mean flows for Jan 1989-Feb 1991
+ extremes and 30 day running mean for 1964-1988



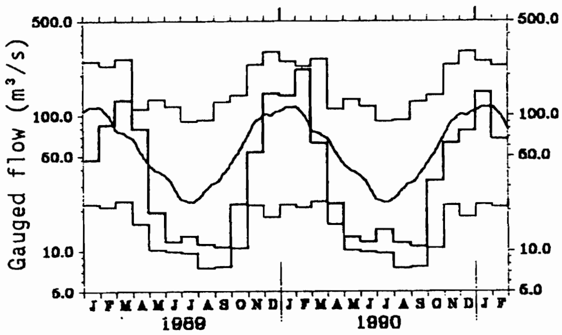
042010 Itchen at Highbridge+Allbrook
Monthly mean flows for Jan 1989-Feb 1991
+ extremes and 30 day running mean for 1958-1988



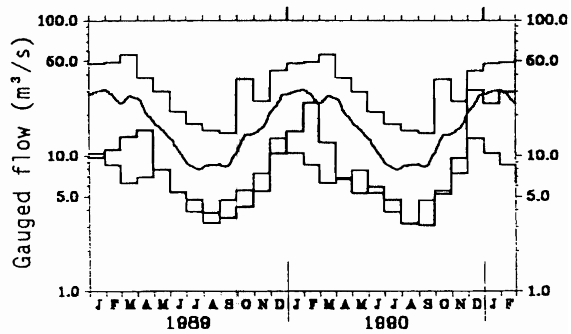
052005 Tone at Bishops Hull
Monthly mean flows for Jan 1989-Feb 1991
+ extremes and 30 day running mean for 1961-1988



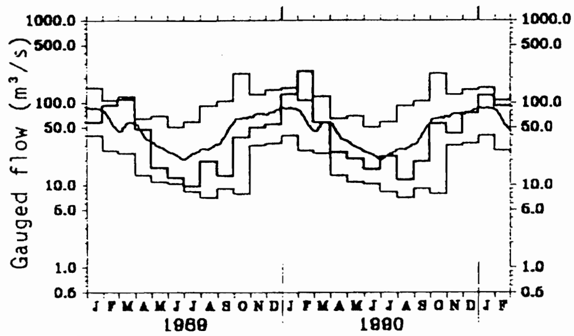
054001 Severn at Bewdley
Monthly mean flows for Jan 1989-Feb 1991
+ extremes and 30 day running mean for 1921-1988



027041 Derwent at Buttercrambe
Monthly mean flows for Jan 1989-Feb 1991
+ extremes and 30 day running mean for 1973-1988



076007 Eden at Sheepmount
Monthly mean flows for Jan 1989-Feb 1991
+ extremes and 30 day running mean for 1967-1988



084013 Clyde at Daldowie
Monthly mean flows for Jan 1989-Feb 1991
+ extremes and 30 day running mean for 1963-1988

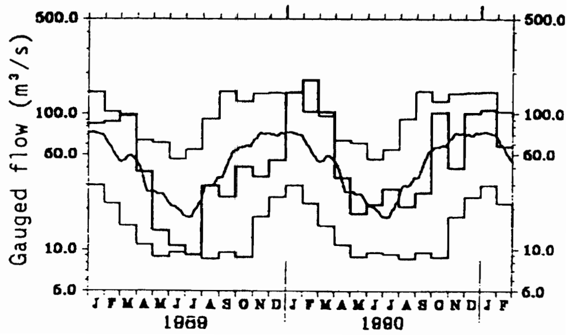
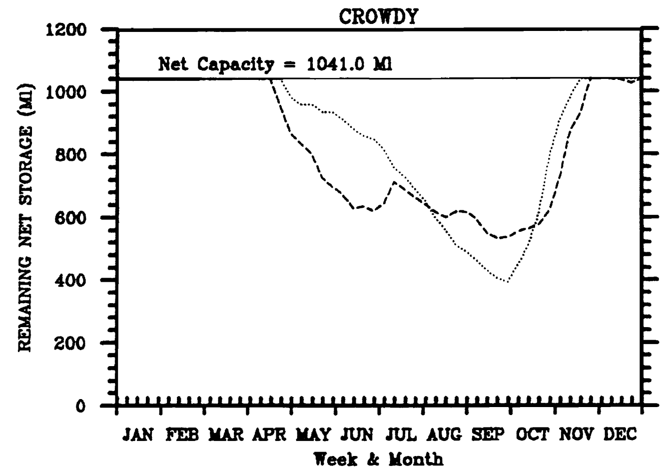


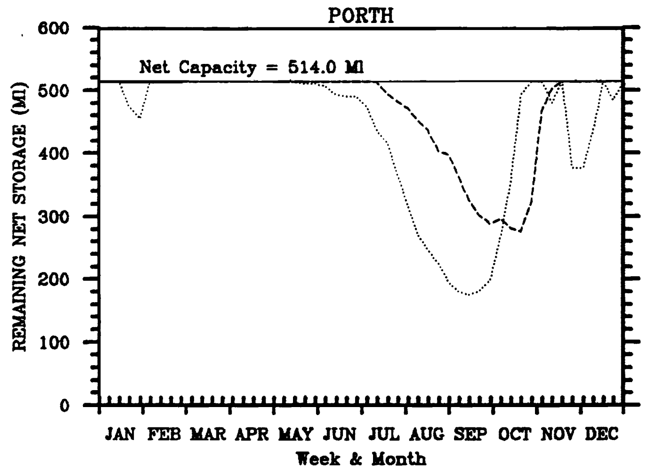
TABLE 3 RUNOFF AS MM. AND AS A PERCENTAGE OF THE PERIOD OF RECORD AVERAGE WITH SELECTED PERIODS RANKED IN THE RECORD

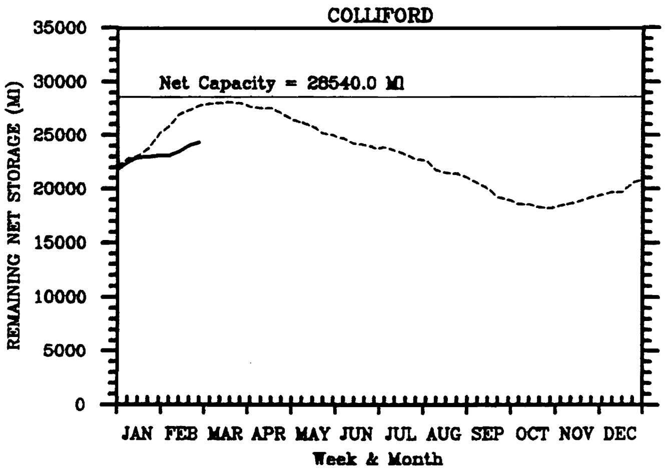
River/ Station name	Sep 1990	Oct	Nov	Dec	Jan 1991	Feb 1991		10/90 to 2/91		3/90 to 2/91		5/89 to 2/91		8/88 to 2/91	
	mm %LT	mm %LT	mm %LT	mm %LT	mm %LT	mm %LT	rank /yrs	mm %LT	rank /yrs	mm %LT	rank /yrs	mm %LT	rank /yrs	mm %LT	rank /yrs
Dee at	23	78	61	69	83	59	8	350	4	617	2	1106	1	1739	1
Park	54	97	82	77	91	85	/19	84	/18	79	/18	78	/17	83	/16
Tay at	41	124	80	108	193	69	8	574	14	1195	27	2241	30	3652	35
Ballathie	58	111	67	76	137	63	/39	91	/39	107	/38	110	/37	/36	/36
Whiteadder Water at	8	62	43	70	67	65	17	308	20	383	9	528	6	478	4
Hutton Castle	50	235	116	157	111	134	/22	140	/22	97	/21	75	/20	74	/19
South Tyne at	23	87	52	137	127	125	28	529	27	714	11	1289	8	1882	7
Haydon Bridge	44	126	57	142	133	185	/29	123	/29	94	/27	93	/25	91	/23
Derwent at	5	9	16	52	41	45	21	162	13	231	3	369	1	558	1
Buttercrambe	38	39	64	128	84	113	/30	93	/30	70	/29	62	/28	64	/27
Trent at	9	14	21	38	53	34	14	161	8	256	3	515	4	762	3
Colwick	53	59	68	85	105	79	/33	84	/33	72	/32	80	/31	81	/30
Lud at	8	8	7	8	9	9	2	40	2	123	1	231	1	365	1
Louth	70	65	47	40	29	25	/23	37	/23	47	/22	51	/21	55	/21
Witham at	3	5	5	7	19	19	12	55	8	110	4	232	6	321	4
Claypole Mill	48	58	41	37	74	72	/32	61	/32	60	/31	72	/31	68	/30
Bedford Ouse at	3	8	5	6	18	12	7	49	8	97	4	308	17	485	15
Bedford	60	79	25	21	50	36	/59	39	/58	45	/58	80	/57	84	/56
Colne at	2	3	5	6	8	10	8	33	4	64	2	155	2	261	4
Lexden	47	35	40	35	34	55	/32	42	/32	46	/31	64	/30	73	/29
Mimram at	5	5	5	5	7	6	3	28	2	90	4	178	5	271	7
Panshanger Park	62	60	57	49	60	51	/39	56	/38	72	/38	79	/37	85	/36
Thames at	5	7	6	9	26	15	13	63	11	138	8	340	24	493	15
Kingston (natr.)	56	52	28	30	70	46	/109	46	/108	56	/108	78	/107	76	/106
Blackwater at	9	12	12	19	35	21	12	99	6	199	4	451	14	649	11
Swallowfield	68	61	49	62	99	74	/39	71	/39	76	/38	95	/37	93	/36
Coln at	10	10	8	10	37	29	4	93	4	276	4	581	5	782	3
Bibury	70	61	33	25	73	55	/28	51	/28	70	/27	83	/26	77	/25
Great Stour at	6	11	19	21	43	20	6	114	5	192	1	355	1	509	1
Horton	43	53	71	61	104	60	/27	72	/26	65	/24	66	/23	65	/21
Itchen at	20	21	22	24	35	30	4	132	1	370	2	680	3	942	1
Highbridge+Allbrook	76	69	64	57	72	62	/33	65	/33	80	/32	82	/31	80	/30
Stour at	5	8	10	19	59	26	3	123	3	231	2	604	3	834	1
Throop Mill	42	37	32	34	99	47	/19	54	/18	60	/18	86	/17	80	/16
Piddle at	8	12	13	16	35	29	3	104	3	273	3	577	4	785	1
Baggs Mill	52	58	44	38	67	50	/28	52	/27	68	/26	81	/24	74	/22
Exe at	10	44	90	111	160	71	11	476	11	614	4	1287	8	1956	6
Thorverton	25	58	94	83	123	69	/35	88	/35	74	/34	85	/34	86	/33
Tone at	7	8	16	32	82	37	7	175	3	273	2	719	5	1043	2
Bishops Hull	45	29	38	47	103	51	/31	61	/30	58	/30	84	/29	82	/28
Severn at	6	19	37	48	91	37	20	234	20	323	4	706	16	1076	16
Bewdley	27	56	69	77	129	65	/70	84	/70	71	/69	85	/69	88	/68
Wye at	121	252	234	291	226	196	23	1199	19	1813	6	3603	10	5439	11
Cefn Brwyn	73	121	93	104	93	116	/37	103	/37	88	/33	93	/28	97	/25
Cynon at	19	94	94	158	280	140	18	765	13	985	6	2329	14	3406	15
Abercynon	28	77	61	83	150	107	/33	96	/33	78	/31	100	/29	99	/27
Dee at	66	222	198	277	175	164	14	1036	10	1434	4	2942	5	4614	7
New Inn	48	111	81	112	74	102	/22	94	/22	79	/21	88	/20	93	/20
Lune at	36	142	73	93	146	183	27	637	13	916	6	1876	6	3024	9
Caton	41	116	54	61	101	197	/29	96	/27	80	/27	89	/25	98	/23
Clyde at	35	143	54	141	150	73	15	560	23	907	22	1620	23	2428	23
Daldowie	60	177	56	147	147	104	/28	122	/28	119	/27	115	/26	116	/25

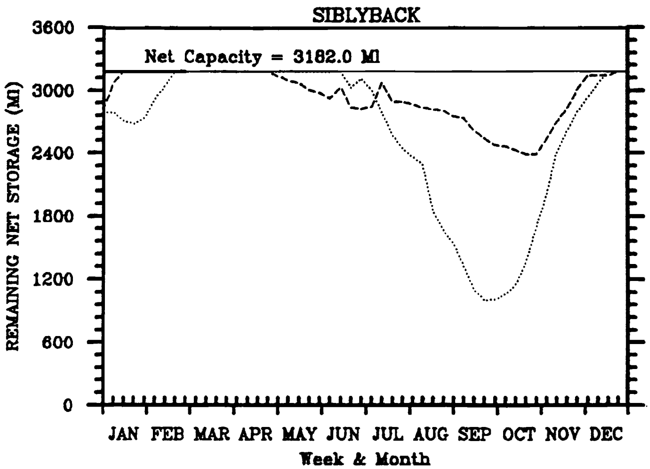
Notes
(i) Values based on gauged flow data unless flagged (natr.), when naturalised data have been used.
(ii) Values are ranked so that lowest runoff as rank 1;
(iii) %LT means percentage of long term average from the start of the record to 1989. For the long periods (at the right of this table), the end date for the long term is 1990.

FIGURE 3 EAST CORNWALL RESERVOIR LEVELS FOR 1991 AND HISTORIC DROUGHTS









	NET CAPACITY (Ml)	CURRENT YEAR 1991 (Ml)	CURRENT YEAR 1991 % Full	HISTORIC AND DROUGHT YEARS 1976 (Ml)	HISTORIC AND DROUGHT YEARS 1976 % Full	HISTORIC AND DROUGHT YEARS 1990 (Ml)	HISTORIC AND DROUGHT YEARS 1990 % Full
	WEEK NO 9						
COLLIFORD	28540.0	24339	85	N/A	N/A	27795	97
CROWDY	1041.0	1041	100	1041	100	1041	100
PORTH	514.0	514	100	514	100	514	100
SIBLYBACK	3182.0	3182	100	3182	100	3182	100

.... 1976 Drawdown ------- 1990 Drawdown —— 1991 Drawdown

Indicates a Drought year

Fowey District Reservoirs

RESERVOIR SITUATION AT
04/03/91
WEEK NO 9

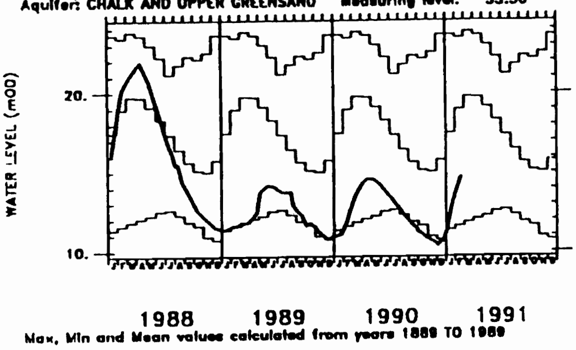
SOUTH WEST WATER

FIGURE 4 GROUNDWATER HYDROGRAPHS

Site name: DALTON HOLME

National grid reference: SE 9651 4530 Well number: SE94/5

Aquifer: CHALK AND UPPER GREENSAND Measuring level: 33.50

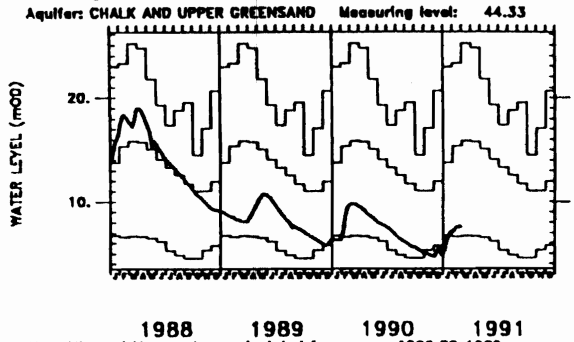


Max, Min and Mean values calculated from years 1889 TO 1989

Site name: LITTLE BROCKLESBY

National grid reference: TA 1371 0888 Well number: TA10/40

Aquifer: CHALK AND UPPER GREENSAND Measuring level: 44.33

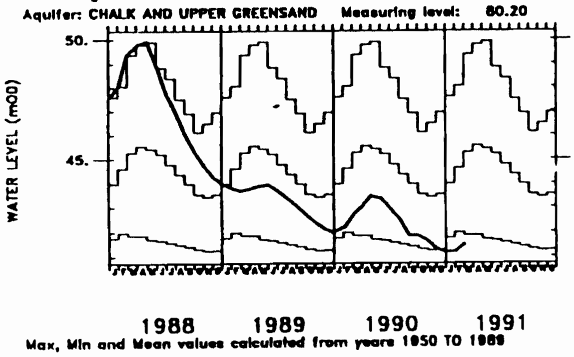


Max, Min and Mean values calculated from years 1926 TO 1989

Site name: WASHPIT FARM

National grid reference: TF 8138 1960 Well number: TF81/2

Aquifer: CHALK AND UPPER GREENSAND Measuring level: 80.20

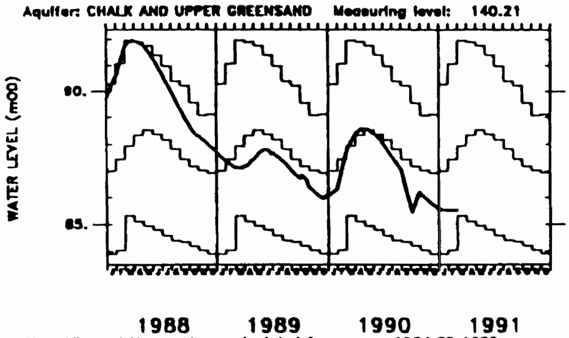


Max, Min and Mean values calculated from years 1950 TO 1989

Site name: THE HOLT

National grid reference: TL 1692 1965 Well number: TL11/9

Aquifer: CHALK AND UPPER GREENSAND Measuring level: 140.21

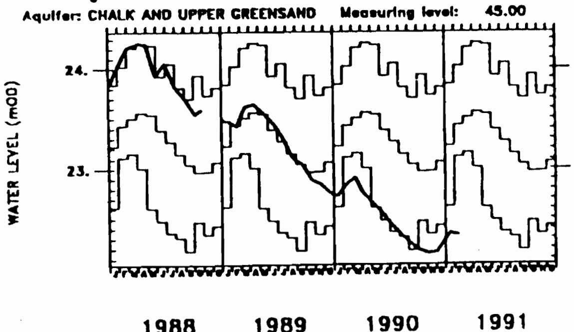


Max, Min and Mean values calculated from years 1964 TO 1989

Site name: FAIRFIELDS

National grid reference: TM 2461 6109 Well number: TM26/46

Aquifer: CHALK AND UPPER GREENSAND Measuring level: 45.00

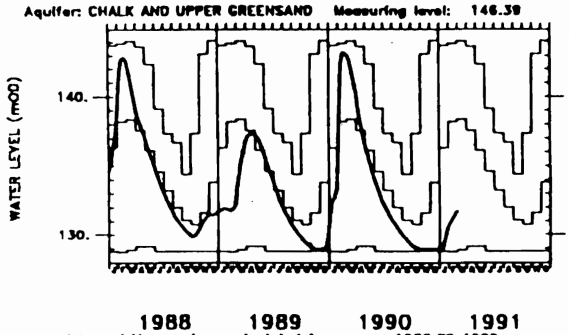


Max, Min and Mean values calculated from years 1974 TO 1988

Site name: ROCKLEY

National grid reference: SU 1655 7174 Well number: SU17/57

Aquifer: CHALK AND UPPER GREENSAND Measuring level: 146.39

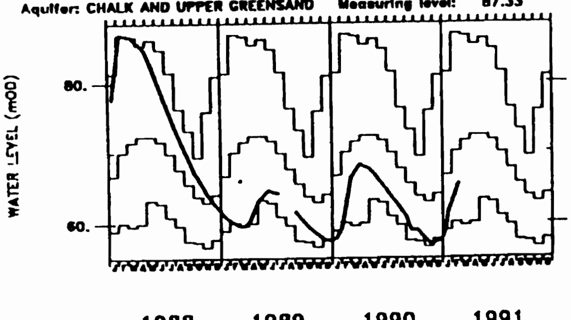


Max, Min and Mean values calculated from years 1933 TO 1989

Site name: LITTLE BUCKET FARM,WALTHAM

National grid reference: TR 1225 4690 Well number: TR14/9

Aquifer: CHALK AND UPPER GREENSAND Measuring level: 87.33

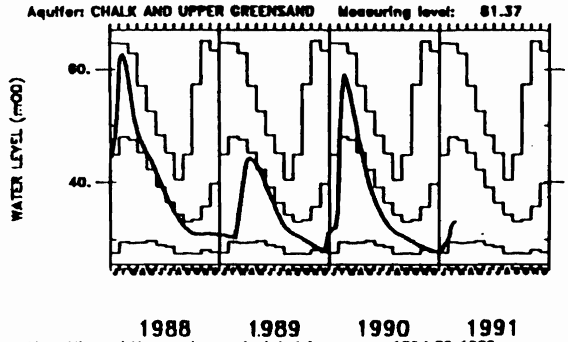


Max, Min and Mean values calculated from years 1971 TO 1989

Site name: COMPTON HOUSE

National grid reference: SU 7755 1490 Well number: SU71/23

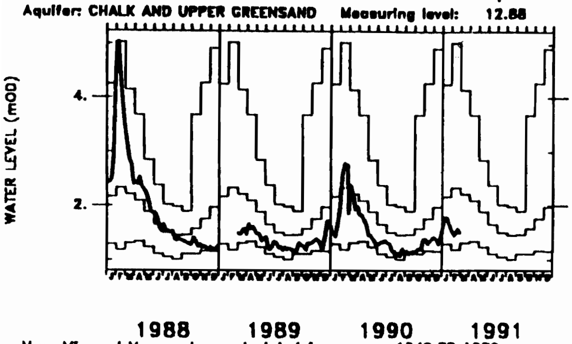
Aquifer: CHALK AND UPPER GREENSAND Measuring level: 81.37



Max, Min and Mean values calculated from years 1894 TO 1989

Site name: WEST DEAN NO.3

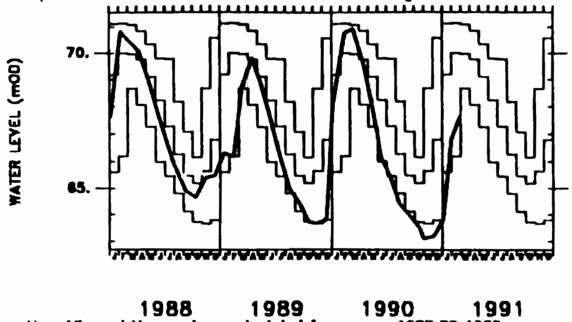
National grid reference: TV 5280 9920 Well number: TV59/7C
Aquifer: CHALK AND UPPER GREENSAND Measuring level: 12.88



Max, Min and Mean values calculated from years 1940 TO 1989

Site name: ASHTON FARM

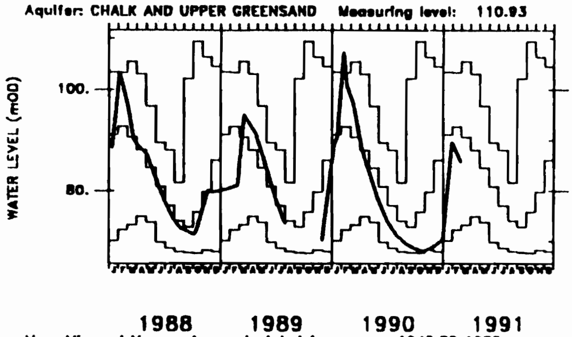
National grid reference: SY 6620 8810 Well number: SY68/34
Aquifer: CHALK AND UPPER GREENSAND Measuring level: 72.16



Max, Min and Mean values calculated from years 1977 TO 1989

Site name: WEST WOODYATES MANOR

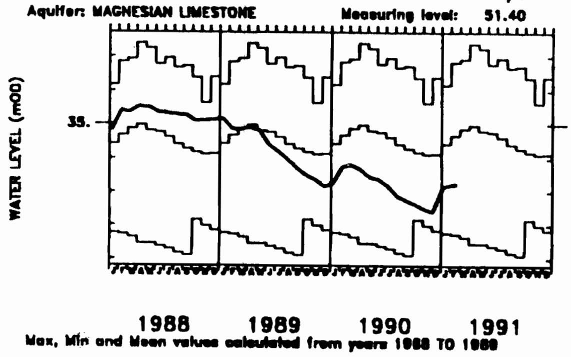
National grid reference: SU 0160 1960 Well number: SU01/58
Aquifer: CHALK AND UPPER GREENSAND Measuring level: 110.93



Max, Min and Mean values calculated from years 1942 TO 1989

Site name: PEGGY ELLERTON FARM,HAZLEWOOD

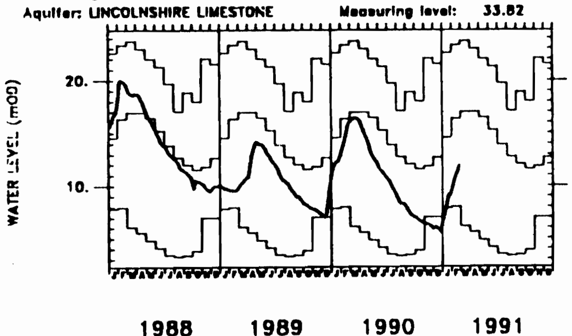
National grid reference: SE 4535 3964 Well number: SE43/9
Aquifer: MAGNESIAN LIMESTONE Measuring level: 51.40



Max, Min and Mean values calculated from years 1968 TO 1989

Site name: NEW RED LION

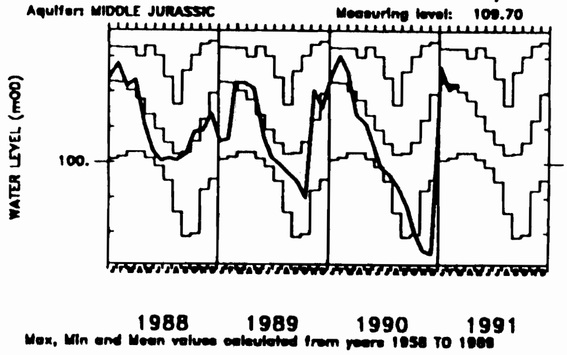
National grid reference: TF 0885 3034 Well number: TF03/37
Aquifer: LINCOLNSHIRE LIMESTONE Measuring level: 33.82



Max, Min and Mean values calculated from years 1964 TO 1989

Site name: AMPNEY CRUCIS

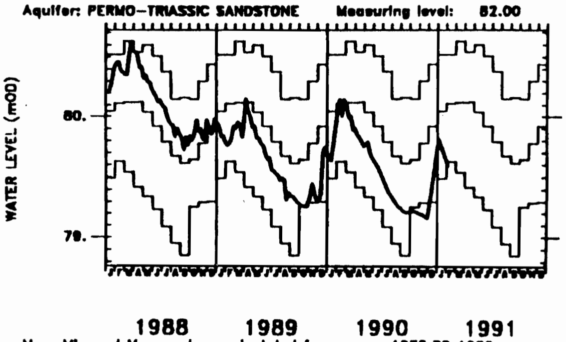
National grid reference: SP 0595 0190 Well number: SP00/62
Aquifer: MIDDLE JURASSIC Measuring level: 109.70



Max, Min and Mean values calculated from years 1958 TO 1989

Site name: LLANFAIR DC

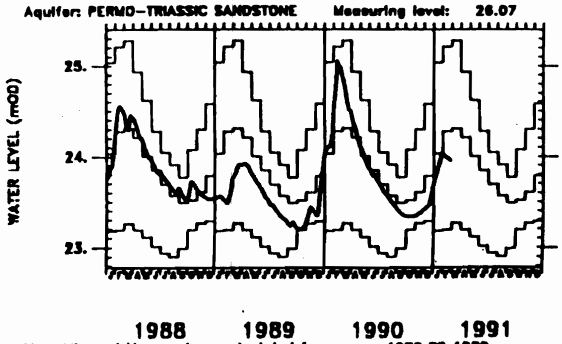
National grid reference: SJ 1374 5556 Well number: SJ15/15
Aquifer: PERMO-TRIASSIC SANDSTONE Measuring level: 82.00



Max, Min and Mean values calculated from years 1972 TO 1989

Site name: BUSSELS NO.7A

National grid reference: SX 9528 9872 Well number: SX99/37B
Aquifer: PERMO-TRIASSIC SANDSTONE Measuring level: 26.07



Max, Min and Mean values calculated from years 1972 TO 1989

TABLE 4 A COMPARISON OF FEBRUARY GROUNDWATER LEVELS: 1991 AND 1976

Borehole	Aquifer	First year of record	Av. Feb level	Feb 1976 Day	Feb 1976 level	Feb 1991 (March) Day	Feb 1991 (March) level	No. of years of record with Feb levels ≤ 1991	Lowest recorded level before 1991 for any month
Dalton Holme	C & U.G.	1889	18.91	28	13.80	21	14.67	20	10.34
L. Brocklesby	"	1926	15.22	10	6.70	27	7.57	3	4.56
Washpit Farm	"	1950	44.46	01	43.20	05*	41.64	0	41.24
The Holt	"	1964	87.36	26	86.68	01*	85.54	1	83.90
Fairfields	"	1974	23.39	24	23.22	13	22.33	0	22.15
Rockley	"	1933	138.13	29	128.86	27	131.58	4	128.78 dry
L. Bucket Farm	"	1971	69.61	02	66.88	25	65.43	6	56.77
Compton House	"	1894	48.10	26	30.40	26	33.08	4	27.64
West Dean	"	1940	2.32	27	1.59	25	1.66	7	1.01
Limekiln Way	"	1969	125.35	15	124.64	28	124.65	2	124.09
Ashton Farm	"	1977	69.57	02	64.84	01*	67.60	2	63.10
West Woodyates	"	1942	92.75	01	72.22	05*	85.90	8	67.62
Peggy Ellerton	Magnesian Limestone	1968	34.63	23	31.73	18	33.23	2	31.10
New Red Lion	L.L.	1964	16.26	27	7.97	26	11.77	4	3.29
Ampney Crucis	M.J.	1958	102.28	29	100.34	04*	102.21	13	97.38
Llanfair Dc	PTS	1972	80.11	01	79.63	05	79.59	0	78.85
Bussels 7A	PTS	1972	24.31	24	23.23	26	23.96	4	22.90
Alstonfield	C.B.	1974	199.46	26	185.13	13	188.30	3	174.22

Groundwater levels are in metres above Ordnance Datum

C & U.G. Chalk and Upper Greensand;
L.L. Lincolnshire Limestone
PTS Permo-Triassic Sandstones
M.J. Middle Jurassic Limestone
C.B. Carboniferous Limestone

* March levels

FIGURE 5 LOCATION MAP OF GAUGING STATIONS AND GROUNDWATER INDEX WELLS