Hydrological Summary for Great Britain

FEBRUARY 1994

Rainfall

February was another largely unsettled month but spatial variations in both temperature and rainfall totals were greater than earlier in the winter. Snow constituted a substantial proportion of total precipitation in many upland catchments in northern Britain; accordingly the February rainfall totals should be treated with caution. Apart from north-western Britain, regional rainfall totals were above average but generally lower than in the two previous months. The relatively even distribution of the February rainfall - in temporal terms - helped moderate the flood risk over the late winter and encouraged sustained high rates of aquifer recharge. The number of dry days registered during the three-month winter period was remarkably low, in southern and central England especially. For England and Wales as a whole, the December 93-February 94 period ranks amongst the 10 wettest in a rainfall series from 1767. Winter rainfall totals were notably high throughout much of Britain - return periods exceed 20 years in many areas. A particularly wet phase can be traced back to last September in the English lowlands - the autumn/winter period constitutes the wettest six-month sequence for at least ten years over large areas - and rainfall accumulations in the 18-24 month timeframes are well above average, notably so in the Anglian region. In broad terms, the excess rainfall over the last 21 months is comparable with the deficiencies over the preceding two years.

River Flow

With the exception of a few south-western catchments, mean river flows for February were considerably below those registered for January. Impervious catchments in much of northern Britain reported below average monthly runoff totals - but mostly well within the normal range apart from a few rivers draining from the Scottish Highlands. By contrast, exceptionally high baseflow contributions ensured that February runoff totals remained well above average in permeable lowland catchments. More notably, the 1993/94 winter runoff totals are without recorded precedent in the majority of eastern and southern England. For a significant proportion of spring-fed rivers, the December-February runoff total eclipsed the preceding maximum for *any* three-month sequence, examples include the Mimram, Kennet and Hampshire Avon (all with records extending over 25 years). Accumulated runoff totals are also outstanding in the six-month timeframe and the accounting period needs to extend back over at least four years to detect any obvious echoes of the drought.

Groundwater

Although the 1989/90 winter (December-February) was substantially wetter over many Chalk outcrop areas, aquifer recharge in 1993/94 was generally much greater - largely a result of the contrasting antecedent soil moisture conditions (late autumn soils in 1989 were remarkably dry). In the more responsive Chalk wells (e.g. Compton) levels declined from the record January peaks whereas water-tables continued to rise through February in many deeper eastern wells. Typically, late winter levels comparable to those recently experienced have been recorded on only three or four occasions in the last 50 years. Levels at the Holt and Washpit Farm are above, or close to, the period-of-record maxima established early in 1988 - the intervening six years have been characterised by remarkable departures from the seasonal variation with lengthy periods below previous minima. Elsewhere in the Chalk, levels at all index boreholes were close to the seasonal maximum. Recessions are underway in the Lincolnshire Limestone and Carboniferous Limestone but levels remain well above the seasonal mean. Unsurprisingly, given the geographical spread of the Permo-Triassic sandstones aquifers, water-tables display less spatial coherence. Generally, however, levels are well within the normal range and recoveries continue in the slow-responding confined aquifers of the Midlands.

General

Lowland resources are exceptionally healthy and the recent saturated conditions have provided an extension, albeit temporary, of aquatic habitats that is in stark contrast to the much diminished river network in the summer of 1992. Away from southern, central and eastern England, the resources outlook for the summer will be heavily influenced by rainfall amounts over the next six weeks (before accelerating evaporation demands limit its effectiveness).

Institute of Hydrology

British Geological Survey

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. Reservoir contents information has been supplied by the Water Services Companies, the NRA or, in Scotland, the Lothians Regional Council. The most recent areal rainfall figures are derived from a restricted network of raingauges and a proportion of the river flow data is of a provisional nature.

A map (Figure 3) is provided to assist in the location of the principal monitoring sites.

Financial support towards the production of the Hydrological Summaries is given by the Department of the Environment and the National Rivers Authority.

The Hydrological Summaries are available on annual subscription at a current cost of £48 per year - enquiries should be directed to the National Water Archive Office at the address below. No charge is made to those organisations providing data for the Summaries.

* For reasons of consistency and to provide greater spatial discrimination, the original ten regional divisions of the NRA have been retained for use in the Hydrological Summaries.

MORECS

The recent monthly regional rainfall data featured in the Hydrological Summaries are MORECS assessments. MORECS is the generic name for The Meteorological Office services involving the calculation of evaporation and soil moisture routinely for Great Britain. Products include a weekly issue of maps and tables of potential and actual evaporation, soil moisture deficits, effective rainfall and the hydrometeorological variables used to calculate them. The data are used to provide values for 40 km squares - or larger areas - and various sets of maps and tables are available according to user requirements. Options include a day-by-day retrospective calculation of soil moisture at any of 4000 rain-gauge sites.

Further information about MORECS services may be obtained from: The Meteorological Office, Sutton House, London Road, Bracknell, RG12 2SY

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TABLE 1 1993/94 RAINFALL AS A PERCENTAGE OF THE 1961-90 AVERAGE

		Feb 1993	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan 1994	Feb
England and Wales	mm	16	26	94	89	68	80	54	110	90	80	152	115	82
	%	25	36	157	139	105	129	71	143	106	88	162	131	130
NRA REGIONS														
North West	mm	18	38	123	128	57	109	75	86	51	64	248	162	77
	%	23	40	173	171	70	128	70	75	40	52	200	134	99
Northumbria	mm	16	25	123	119	39	59	76	108	90	64	135	129	72
	%	27	36	220	192	65	91	94	148	118	74	167	153	122
Severn-Trent	mm	9	16	79	80	72	79	44	96	73	66	137	87	66
	%	17	26	144	136	122	149	66	150	114	93	178	124	123
Yorkshire	mm	19	15	102	83	48	68	78	133	62	64	134	120	69
	%	33	22	173	138	80	115	105	196	85	80	161	152	119
Anglian	mm	17	17	71	52	49	69	46	105	90	70	85	69	41
	%	46	36	154	108	96	141	84	214	176	121	155	138	110
Thames	mm	7	25	83	61	57	55	33	102	111	47	104	91	52
	%	16	45	166	109	104	112	57	173	179	72	149	143	116
Southern	mm	9	31	91	58	53	62	37	123	134	62	154	116	60
	%	17	49	172	107	98	129	65	178	168	73	188	145	111
Wessex	mm	9	40	83	62	69	76	37	119	126	63	169	121	97
	%	14	57	157	102	121	146	56	165	159	76	182	139	150
South West	mm	23	33	99	131	108	128	39	168	119	106	264	171	166
	%	23	33	143	182	157	186	46	181	103	85	190	124	164
Welsh	mm	24	35	112	134	99	111	74	118	80	109	259	170	128
	%	25	33	140	163	125	144	73	103	58	77	169	119	132
Scotland	mm	67	120	116	111	75	112	74	76	117	96	212	247	97
	%	66	96	153	129	87	119	63	54	75	63	141	164	95
RIVER PURIFICATION BOARDS														
Highland	mm	120	156	85	93	83	142	86	53	137	69	266	288	72
	%	94	96	93	101	85	134	68	31	69	34	135	153	57
North-East	mm	33	55	69	108	59	79	72	87	165	45	113	146	97
	%	51	71	115	157	89	108	83	100	170	45	122	147	149
Tay	mm	25	114	134	128	58	90	60	102	132	74	157	221	125
	%	26	105	216	154	79	117	64	89	102	61	124	153	132
Forth	mm	20	90	109	120	72	73	50	79	107	73	187	184	87
	%	25	96	185	162	104	97	53	72	93	65	170	156	110
Tweed	mm	16	43	124	131	62	54	52	90	135	55	171	152	81
	%	24	54	218	185	95	74	59	101	142	59	184	152	121
Solway	mm	29	101	165	146	72	101	67	101	52	97	266	241	127
	%	29	86	214	172	86	112	56	71	33	67	180	154	126
Clyde	mm	69	158	159	117	77	137	84	75	66	112	300	326	115
	%	58	107	189	129	83	126	63	42	34	62	168	172	97

Note: The monthly rainfall figures for the NRA regions for January and February 1994 correspond to the MORECS areal assessments derived by The Meteorological Office. In northern England these initial assessments may have a particularly wide error band associated with them. The figures for the RPB regions from January 1994 were derived by IH in collaboration with the RPBs. Snowfall was substantial in February and as a consequence the rainfall figures should be interpreted with particular caution. The provisional figures for England and Wales and for Scotland are derived using a different raingauge network. Regional areal rainfall figures are regularly updated (normally one or two months in arrears) using figures derived from a far denser raingauge network.

TABLE 2 RAINFALL RETURN PERIOD ESTIMATES

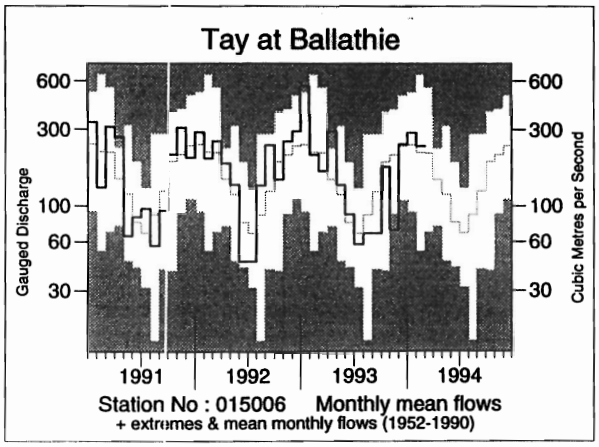
		Dec93-Feb94		Mar93-Feb94		Jul92-Feb94		Mar90-Feb94	
		Est Return Period, years		Est Return Period, years		Est Return Period, years		Est Return Period, years	
England and Wales	mm	349		1039		1777		3470	
	% LTA	142	15-25	116	5-10	116	10-20	97	2-5
NRA REGIONS									
North West	mm	487		1218		2149		4613	
	% LTA	151	20-35	101	2-5	103	2-5	96	2-5
Northumbria	mm	336		1039		1671		3433	
	% LTA	150	20-35	122	10-20	115	10-20	101	2-5
Severn-Trent	mm	290		895		1513		2951	
	% LTA	144	10-20	119	5-15	119	15-25	98	2-5
Yorkshire	mm	323		976		1611		3144	
	% LTA	147	15-25	119	10-20	115	10-20	96	2-5
Anglian	mm	195		764		1293		2358	
	% LTA	137	10-20	128	30-40	129	140-180	99	2-5
Thames	mm	248		822		1441		2659	
	% LTA	138	5-10	119	5-10	124	30-50	96	2-5
Southern	mm	331		982		1638		3032	
	% LTA	153	15-25	126	15-25	123	20-40	97	2-5
Wessex	mm	388		1063		1759		3266	
	% LTA	158	20-40	127	15-25	123	20-40	97	2-5
South West	mm	601		1532		2511		4687	
	% LTA	159	30-50	130	30-60	123	30-60	100	<2
Welsh	mm	556		1428		2535		5100	
	% LTA	142	10-20	109	2-5	111	5-10	97	2-5
Scotland	mm	556		1453		2809		6404	
	% LTA	138	20-40	101	2-5	112	10-20	111	40-60
RIVER PURIFICATION BOARDS									
Highland	mm	626		1530		3285		7837	
	% LTA	122	5-10	87	5-10	107	2-5	111	20-60
North-East	mm	356		1095		1854		3997	
	% LTA	136	10-25	113	5-10	111	5-10	103	2-5
Tay	mm	503		1395		2547		5391	
	% LTA	137	10-20	114	5-10	120	30-40	110	10-20
Forth	mm	458		1231		2238		4845	
	% LTA	149	30-50	111	5-10	116	15-25	109	10-20
Tweed	mm	404		1150		1957		4150	
	% LTA	155	40-60	119	10-20	117	15-25	107	5-10
Solway	mm	634		1536		2704		5955	
	% LTA	157	50-80	108	2-5	109	5-10	105	2-5
Clyde	mm	741		1726		3304		7713	
	% LTA	152	50-80	102	2-5	111	5-10	114	60-90

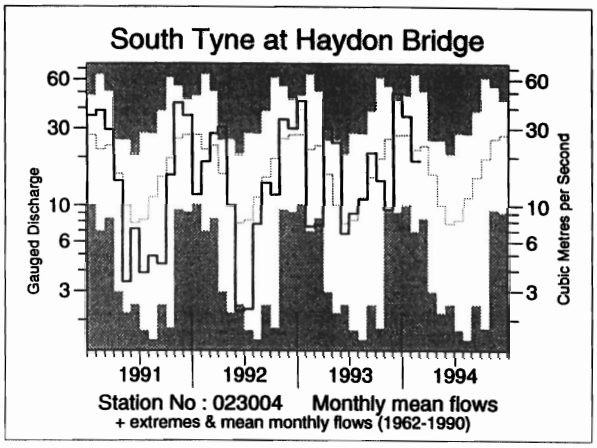
LTA refers to the period 1961-90.

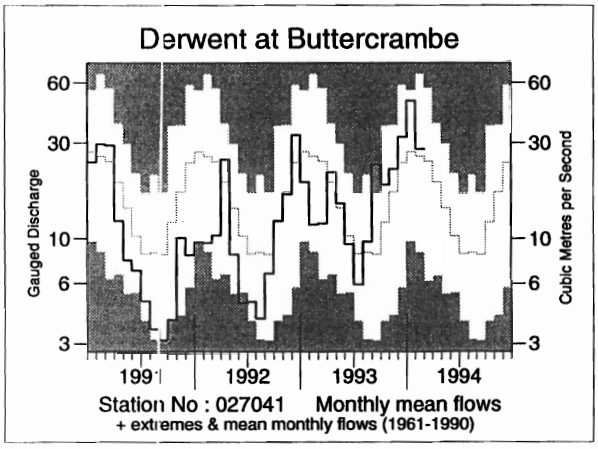
Return period assessments are based on tables provided by the Meteorological Office*. The tables reflect rainfall totals over the period 1911-70 only and the estimate assumes a sensibly stable climate. They assume a start in a specified month; return periods for a start in any month may be expected to be an order of magnitude less - for the longest durations the return period estimates converge. "Wet" return periods underlined.

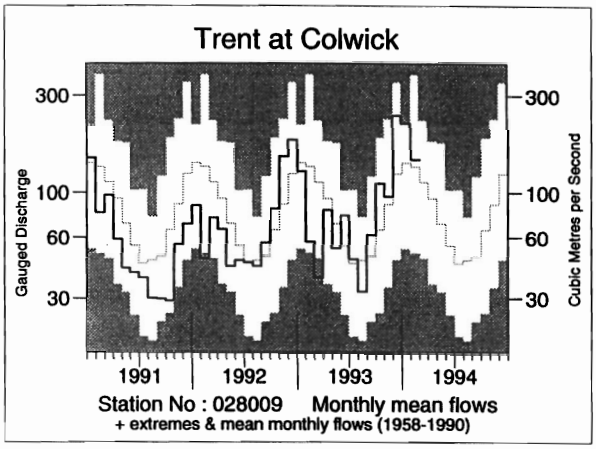
* Tabony, R.C., 1977, The Variability of long duration rainfall over Great Britain, Scientific Paper No. 37, Meteorological Office.

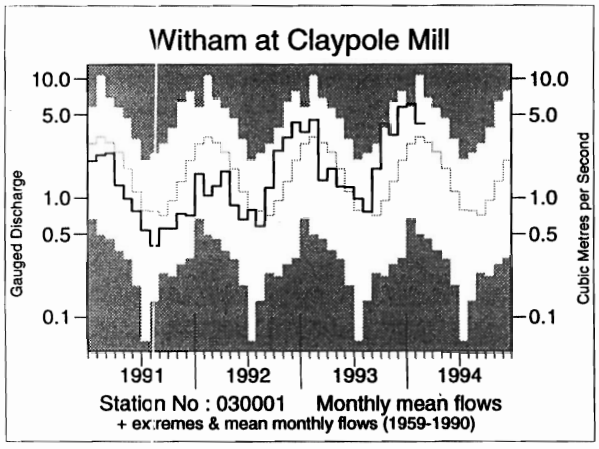
FIGURE 1 MONTHLY RIVER FLOW HYDROGRAPHS

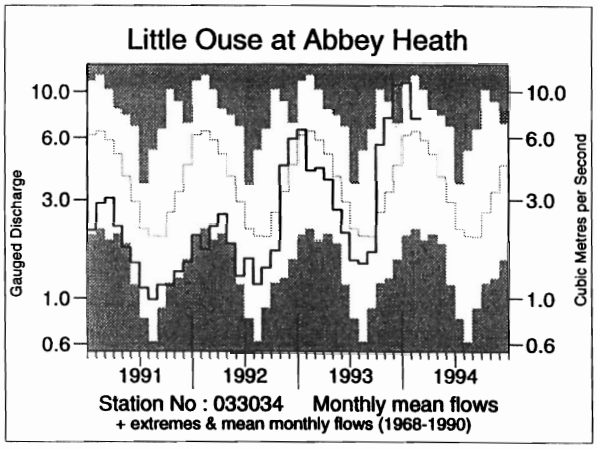


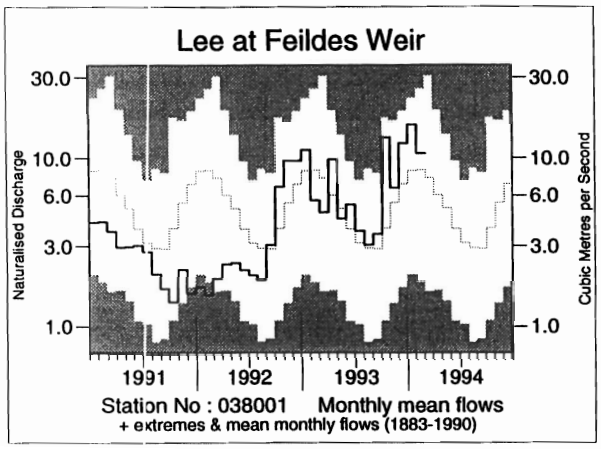


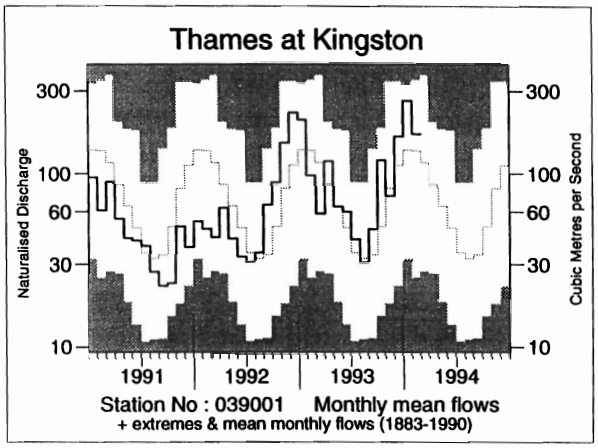


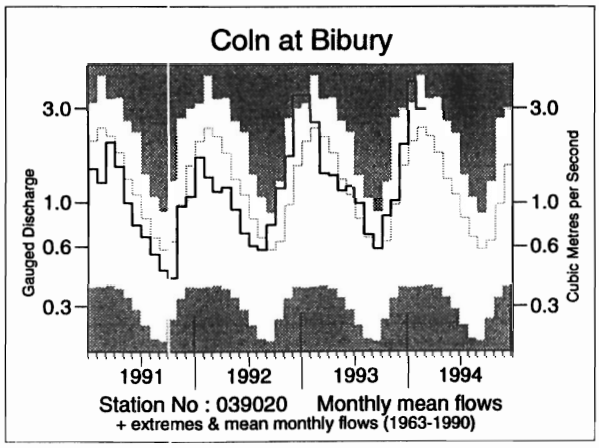


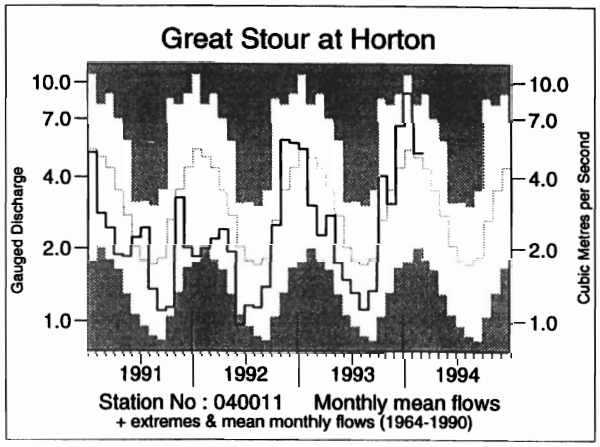


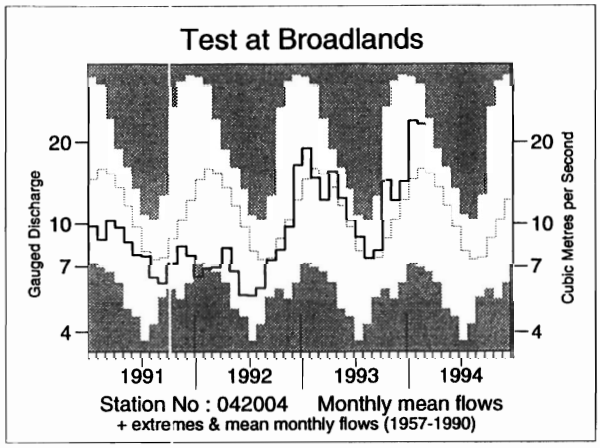


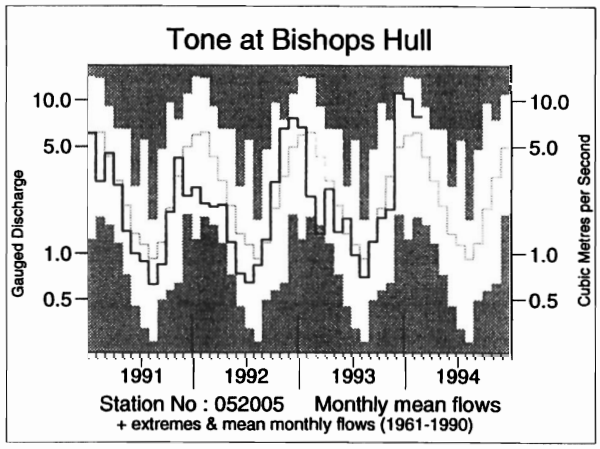


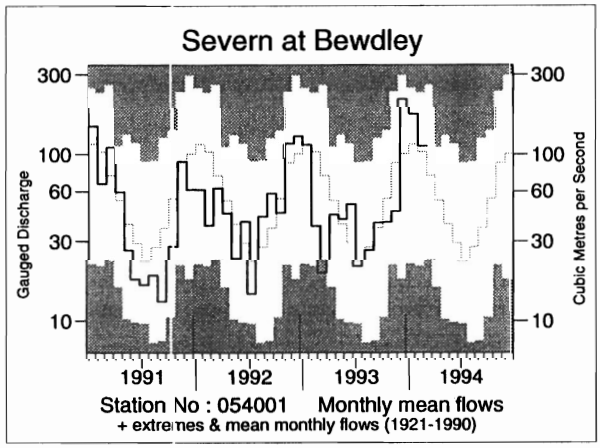


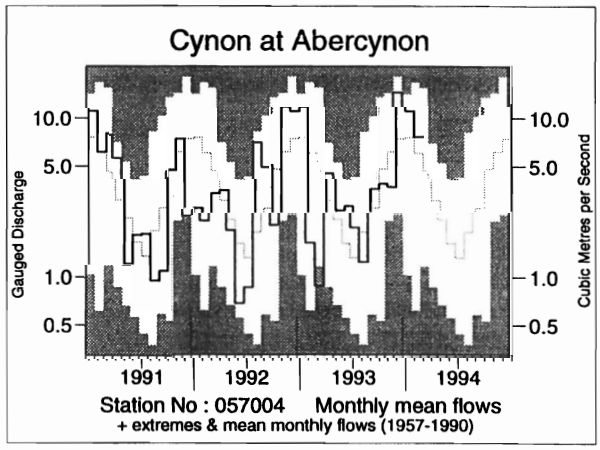

Coln at Bibury
Gauged Discharge
Cubic Metres per Second
3.0
1.0
0.6
0.3
1991
1992
1993
1994
Station No : 039020 Monthly mean flows
+ extremes & mean monthly flows (1963-1990)

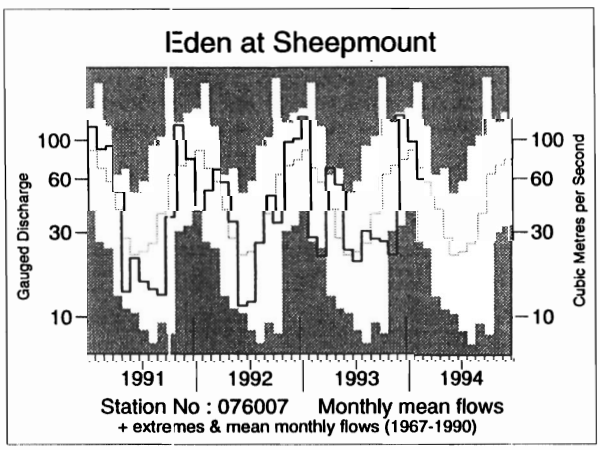

Great Stour at Horton
Gauged Discharge
Cubic Metres per Second
10.0
7.0
4.0
2.0
1.0
1991
1992
1993
1994
Station No : 040011 Monthly mean flows
+ extremes & mean monthly flows (1964-1990)


Test at Broadlands
Gauged Discharge
Cubic Metres per Second
20
10
7
4
1991
1992
1993
1994
Station No : 042004 Monthly mean flows
+ extremes & mean monthly flows (1957-1990)


Tone at Bishops Hull
Gauged Discharge
Cubic Metres per Second
10.0
5.0
1.0
0.5
1991
1992
1993
1994
Station No : 052005 Monthly mean flows
+ extremes & mean monthly flows (1961-1990)


Severn at Bewdley
Gauged Discharge
Cubic Metres per Second
300
100
60
30
10
1991
1992
1993
1994
Station No : 054001 Monthly mean flows
+ extremes & mean monthly flows (1921-1990)


Cynon at Abercynon
Gauged Discharge
Cubic Metres per Second
10.0
5.0
1.0
0.5
1991
1992
1993
1994
Station No : 057004 Monthly mean flows
+ extremes & mean monthly flows (1957-1990)


Eden at Sheepmount
Gauged Discharge
Cubic Metres per Second
100
60
30
10
1991
1992
1993
1994
Station No : 076007 Monthly mean flows
+ extremes & mean monthly flows (1967-1990)

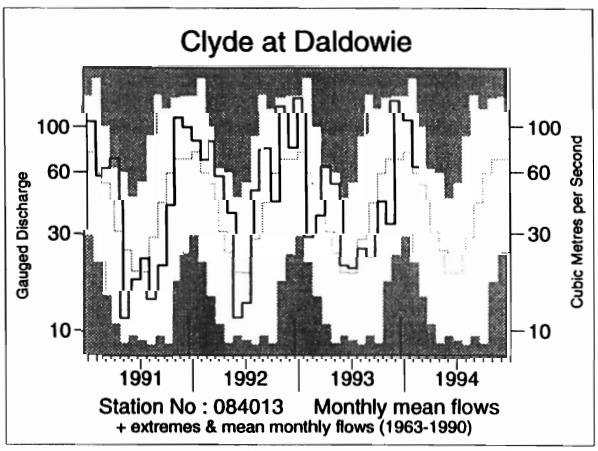

Clyde at Daldowie
Gauged Discharge
Cubic Metres per Second
100
60
30
10
1991
1992
1993
1994
Station No : 084013 Monthly mean flows
+ extremes & mean monthly flows (1963-1990)

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	Oct 1993	Nov	Dec	Jan	Feb 1994		12/93 to 2/94		9/93 to 2/94		5/90 to 2/94		11/88 to 2/94	
	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 Park	172 218	33 43	80 93	122 138	64 89	10 /22	266 106	13 /22	521 114	17 /21	2863 95	8 /18	3897 90	3 /17
Tay at Ballathie	104 93	40 33	144 102	169 117	126 110	29 /42	439 108	27 /42	621 87	14 /41	4568 106	27 /38	6974 113	32 /37
Tweed at Boleside	100 140	30 34	168 175	149 145	78 100	17 /34	395 141	31 /33	556 114	24 /33	3253 113	29 /30	4545 111	26 /28
Whiteadder Water at Hutton Castle	73 267	21 56	98 217	113 194	55 114	18 /25	266 172	24 /25	373 158	24 /25	1547 103	10 /21	1892 86	6 /20
South Tyne at Haydon Bridge	51 75	33 35	176 178	126 131	61 83	16 /32	364 133	30 /32	521 106	19 /30	2894 98	11 /24	4005 95	6 /22
Wharfe at Flint Mill Weir	46 73	25 31	155 159	155 159	64 84	20 /39	373 137	36 /39	523 113	27 /38	2524 92	11 /35	3558 90	5 /34
Derwent at Buttercrambe	32 157	36 131	54 135	82 183	43 109	22 /33	179 144	28 /33	285 153	29 /32	1048 84	7 /29	1351 75	2 /28
Trent at Colwick	40 170	33 108	86 193	78 158	47 111	23 /36	211 153	34 /36	305 147	33 /35	1188 89	9 /32	1683 87	6 /31
Lud at Louth	32 277	32 229	48 248	74 262	49 149	19 /26	170 205	26 /26	246 203	25 /26	658 71	5 /22	894 65	1 /21
Witham at Claypole Mill	38 430	29 240	52 277	56 223	34 133	25 /35	142 197	32 /35	225 222	34 /35	690 101	17 /32	918 91	12 /30
Little Ouse at Abbey Heath	21 220	28 230	41 246	42 190	26 121	20 /26	109 176	26 /26	165 179	24 /26	488 78	3 /23	700 77	1 /21
Colne at Lexden	19 225	17 132	41 246	34 152	23 128	26 /35	97 169	33 /35	138 164	32 /34	426 85	8 /31	623 84	3 /30
Lee at Feildes Weir (natr.)	34 344	17 122	32 175	41 190	25 126	80 /109	97 163	99 /109	157 173	98 /108	516 84	30 /102	748 85	23 /99
Thames at Kingston (natr.)	32 241	19 90	44 146	71 193	41 125	81 /112	156 156	100 /111	220 153	101 /111	842 91	36 /108	1205 89	31 /106
Coln at Bibury	22 132	25 102	49 123	103 204	67 127	25 /31	219 149	30 /31	280 138	27 /30	1380 93	10 /27	1950 91	8 /26
Great Stour at Horton	32 157	23 86	51 151	71 180	36 108	16 /30	158 146	27 /29	223 131	25 /29	893 81	4 /22	1203 76	1 /18
Test at Broadlands	37 165	30 119	37 117	62 167	54 149	35 /37	152 144	35 /37	240 138	34 /36	1108 88	4 /29	1557 87	3 /27
Piddle at Baggs Mill	48 237	41 142	72 172	115 226	79 138	25 /31	266 172	30 /30	373 170	29 /29	1445 95	9 /23	2010 90	6 /20
Exe at Thorverton	87 118	47 48	270 205	209 163	137 132	28 /38	617 167	38 /38	791 137	37 /38	2978 94	13 /35	4163 91	5 /33
Taw at Umberleigh	103 167	44 47	230 198	193 168	124 146	30 /36	547 170	36 /36	732 145	34 /35	2596 99	14 /32	3663 95	11 /31
Tone at Bishops Hull	23 86	25 58	150 225	138 176	96 131	25 /34	384 174	32 /33	448 147	32 /33	1574 88	5 /30	2320 87	4 /28
Severn at Bewdley	24 73	27 51	132 211	108 152	63 109	46 /73	302 158	71 /73	377 126	64 /73	1542 89	17 /70	2240 90	7 /68
Teme at Knightsford Bridge	29 152	33 101	103 191	91 141	65 125	17 /24	259 150	22 /24	331 141	23 /24	1168 85	4 /21	1727 85	2 /19
Cynon at Abercynon	98 82	91 58	375 199	281 148	175 128	25 /36	831 159	34 /36	1108 125	28 /34	4878 101	17 /28	7078 102	16 /27
Dee at New Inn	55 28	69 28	514 210	301 128	176 106	17 /25	991 151	25 /25	1197 99	13 /25	6239 89	3 /21	9006 90	1 /20
Eden at Sheepmount	31 44	25 30	160 175	114 113	63 85	14 /24	337 124	19 /23	425 92	9 /22	2634 100	7 /16	3813 100	6 /13
Clyde at Daldowie	60 74	45 46	192 192	152 141	81 106	20 /31	424 146	29 /31	562 106	17 /30	3501 117	25 /27	4966 117	25 /26
Carron at New Kelso	128 49	64 21	317 92	364 119	84 40	3 /16	766 86	6 /15	994 59	1 /15	9823 99	5 /12	14994 107	9 /10
Ewe at Poolewe	87 39	71 26	264 95	258 98	159 86	12 /24	682 93	13 /24	880 62	2 /23	8744 106	15 /20	13066 111	18 /19

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 is rank 1.
(iii) %LT means percentage of long term average from the start of the record to 1992. For the long periods (at the right of this table), the end date for the long term is 1993.

TABLE 4 START-MONTH RESERVOIR STORAGES UP TO FEBRUARY 1994

Area	Reservoir (R)/ Group (G)		Capacity● (Ml)	1993 Oct	Nov	Dec	1994 Jan	Feb	Mar	1993 Mar
North West	Northern Command Zone[1]	(G)	133375	51	42	44	80	97	93	84
	Vyrnwy	(R)	55146	73	60	64	100	100	100	87
Northumbria	Teesdale[2]	(G)	87936	73	71	69	100	97	96	91
	Kielder	(R)	199175*	84*	87*	80*	99*	98*	91	81*
Severn-Trent	Clywedog	(R)	44922	87	82	83	100	100	98	87
	Derwent Valley[3]	(G)	39525	84	83	79	100	100	99	91
Yorkshire	Washburn[4]	(G)	22035	67	68	59	92	100	98	99
	Bradford supply[5]	(G)	41407	90	86	76	97	99	98	100
Anglian	Grafham	(R)	58707	95	96	93	89	93	98	93
	Rutland	(R)	130061	86	88	88	95	96	97	93
Thames	London[6]	(G)	206232	86	92	88	87	87	87	93
	Farmoor [7]	(G)	13843	93	98	99	98	98	99	96
Southern	Bewl	(R)	28170	74	81	82	97	100	92	91
	Ardingly	(R)	4685	77	100	100	100	100	100	100
Wessex	Clatworthy	(R)	5364*	61	76	68	100	100	100	94
	Bristol W [8]	(G)	38666*	48*	59*	60*	88*	88*	99*	93*
South West	Colliford	(R)	28540	84	86	88	98	100	100	88
	Roadford	(R)	34500	76	81	78	92	98	97	83
	Wimbleball[9]	(R)	21320	74	80	82	100	100	100	99
	Stithians	(R)	5205	93	99	100	100	100	100	98
Welsh	Celyn + Brenig	(G)	131155	92	92	84	100	100	100	96
	Brianne	(R)	62140	91	91	95	100	100	100	96
	Big Five[10]	(G)	69762	80	80	84	98	99	99	91
	Elan Valley[11]	(G)	99106	97	95	99	100	100	100	88
Lothian	Edinburgh/Mid Lothian	(G)	97639	81	82	78+	92	97	94	95
	West Lothian	(G)	5613	87	98	100	100	99	96	91
	East Lothian	(G)	10206	85	98	87	98	97	99	99

● Live or usable capacity (unless indicated otherwise)

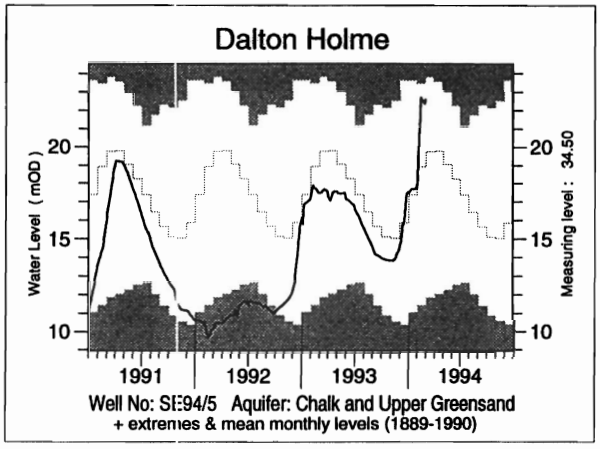
* Gross storage/percentage of gross storage

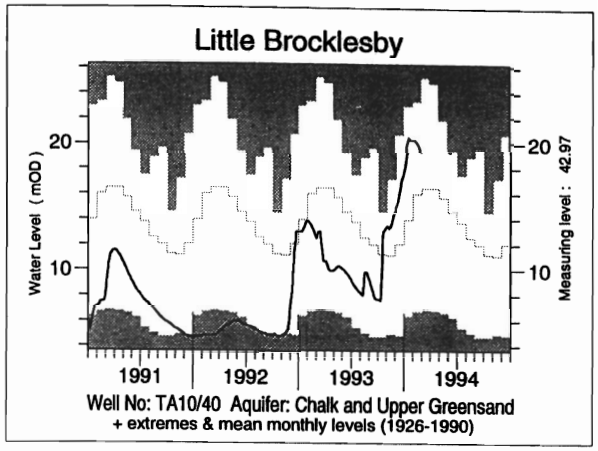
\+ Megget reservoir held at 75% capacity for repairs

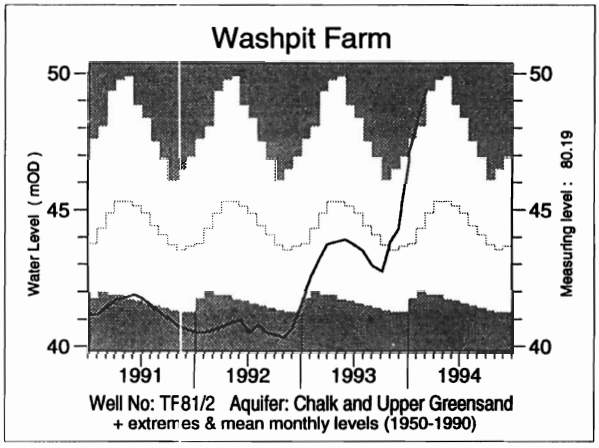
1. Includes Hawes water, Thirlmere, Stocks and Barnacre.
2. Cow Green, Selset, Grassholme, Balderhead, Blackton and Hury.
3. Howden, Derwent and Ladybower.
4. Swinsty, Fewston, Thruscross and Eccup.
5. The Nidd/Barden group (Scar House, Angram, Upper Barden, Lower Barden and Chelker) plus Grimwith.
6. Lower Thames (includes Queen Mother, Wraysbury, Queen Mary, King George VI and Queen Elizabeth II) and Lee Valley (includes King George and William Girling) groups - pumped storages.
7. Farmoor 1 and 2 - pumped storages.
8. Blagdon, Chew Valley and others.
9. Shared between South West (river regulation for abstraction) and Wessex (direct supply).
10. Usk, Talybont, Llandegfedd (pumped storage), Taf Fechan, Taf Fawr.
11. Claerwen, Caban Coch, Pen y Garreg and Craig Goch.

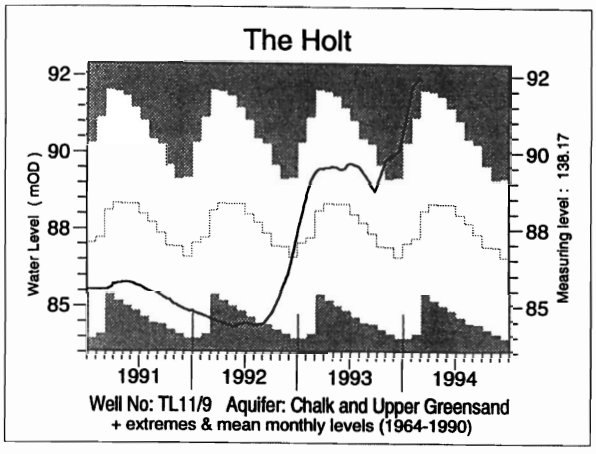
Note: Variations in storage depend on the balance between inputs (from catchment rainfall and any pumping) and outputs (to supply, compensation flow, HEP, amenity). There will be additional losses due to evaporation, especially in the summer months. Operational strategies for making the most efficient use of water stocks will further affect reservoir storages. Table 4 provides a link between the hydrological conditions described elsewhere in the report and the water resources situation.

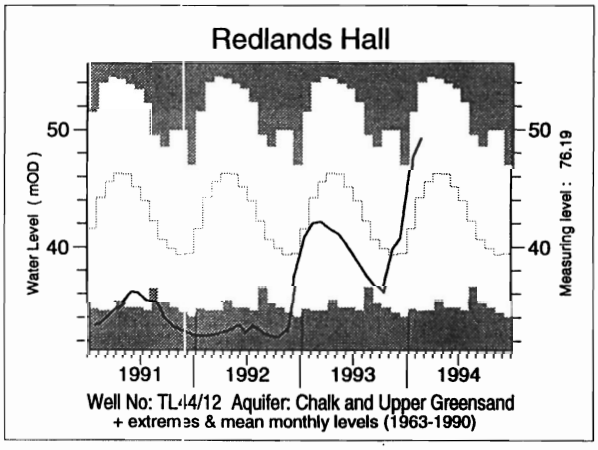
FIGURE 2 GROUNDWATER LEVEL HYDROGRAPHS

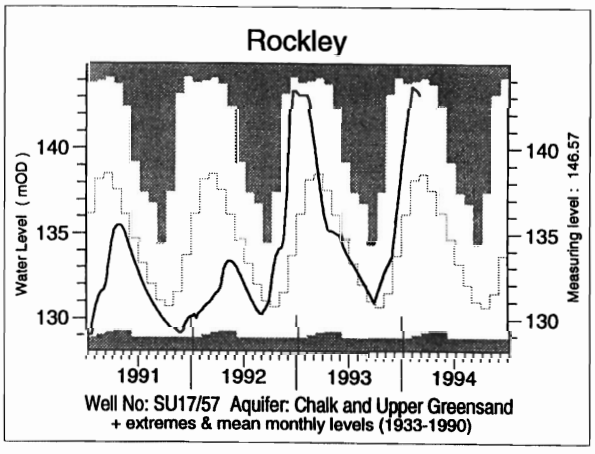


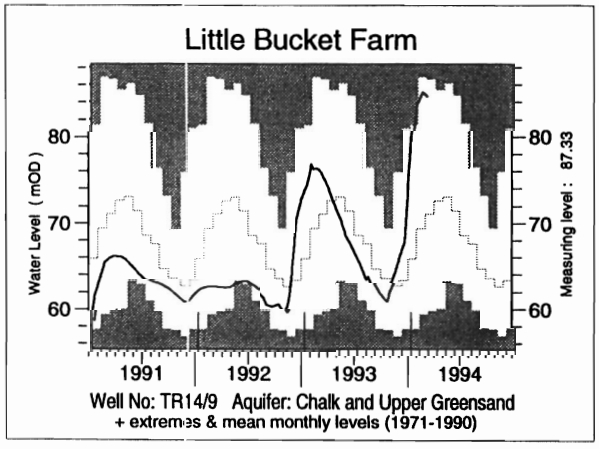


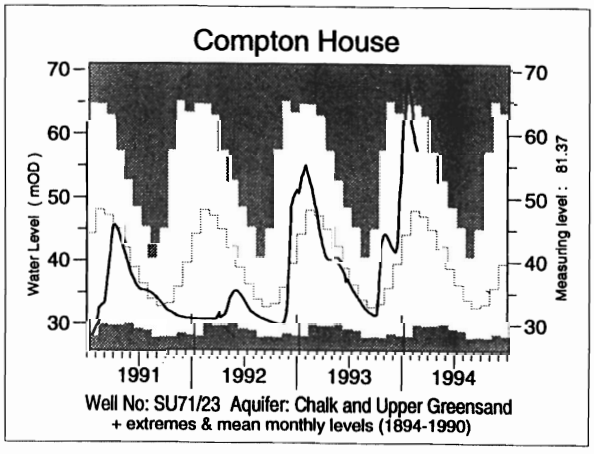


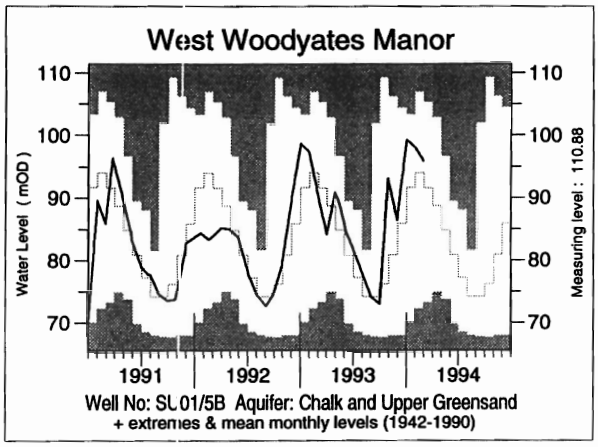


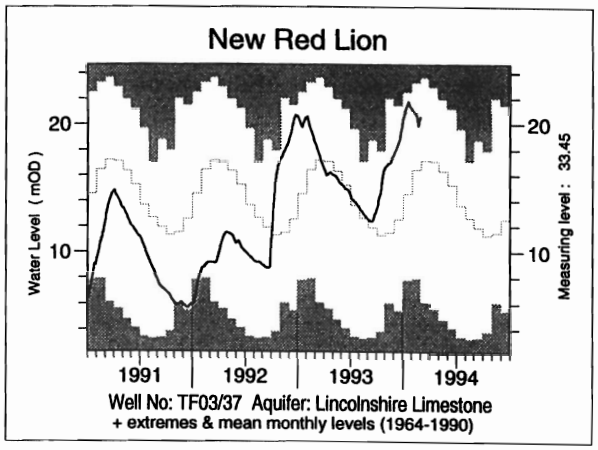


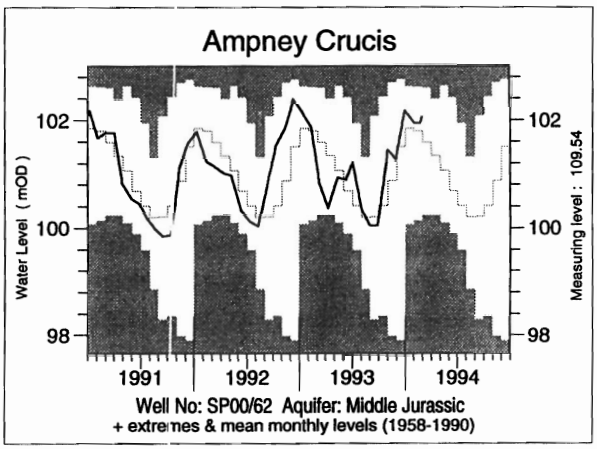


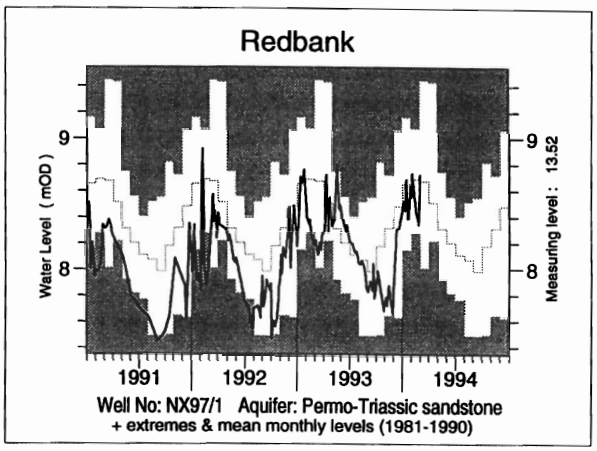


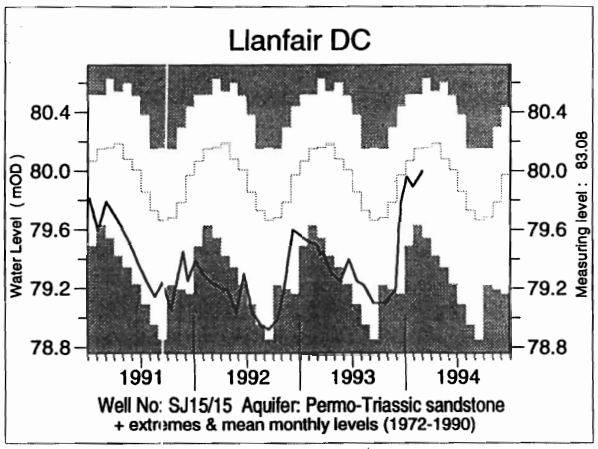


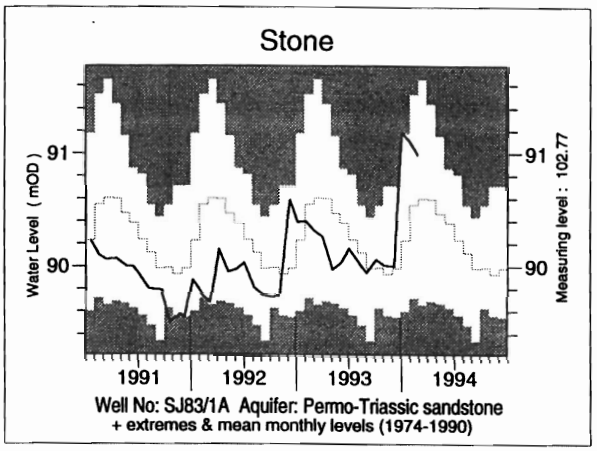

West Woodyates Manor
Water Level (mOD)
110
100
90
80
70
Measuring level : 110.88
1991
1992
1993
1994
Well No: SU01/5B Aquifer: Chalk and Upper Greensand
+ extremes & mean monthly levels (1942-1990)

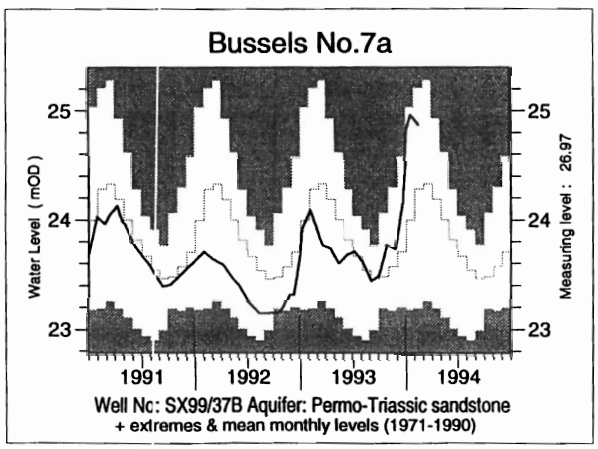

New Red Lion
Water Level (mOD)
20
10
Measuring level : 33.45
1991
1992
1993
1994
Well No: TF03/37 Aquifer: Lincolnshire Limestone
+ extremes & mean monthly levels (1964-1990)


Ampney Crucis
Water Level (mOD)
102
100
98
Measuring level : 109.54
1991
1992
1993
1994
Well No: SP00/62 Aquifer: Middle Jurassic
+ extremes & mean monthly levels (1958-1990)


Redbank
Water Level (mOD)
9
8
Measuring level : 13.52
1991
1992
1993
1994
Well No: NX97/1 Aquifer: Permo-Triassic sandstone
+ extremes & mean monthly levels (1981-1990)


Llanfair DC
Water Level (mOD)
80.4
80.0
79.6
79.2
78.8
Measuring level : 83.08
1991
1992
1993
1994
Well No: SJ15/15 Aquifer: Permo-Triassic sandstone
+ extremes & mean monthly levels (1972-1990)


Stone
Water Level (mOD)
91
90
Measuring level : 102.77
1991
1992
1993
1994
Well No: SJ83/1A Aquifer: Permo-Triassic sandstone
+ extremes & mean monthly levels (1974-1990)


Bussels No.7a
Water Level (mOD)
25
24
23
Measuring level : 26.97
1991
1992
1993
1994
Well No: SX99/37B Aquifer: Permo-Triassic sandstone
+ extremes & mean monthly levels (1971-1990)

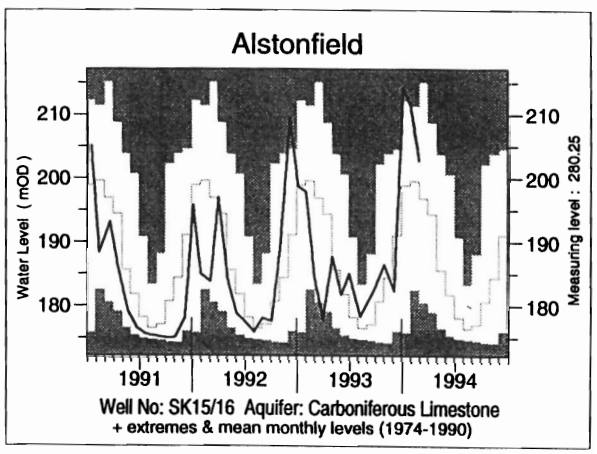

Alstonfield
Water Level (mOD)
210
200
190
180
Measuring level : 280.25
1991
1992
1993
1994
Well No: SK15/16 Aquifer: Carboniferous Limestone
+ extremes & mean monthly levels (1974-1990)

TABLE 5 A COMPARISON OF FEBRUARY GROUNDWATER LEVELS: 1993 AND 1994

Site	Aquifer	Records commence	Minimum February level	Average February level	Maximum February level	February 1993		February/March 1994	
			<1994	<1994	<1994	day	level	day	level
Dalton Holme	C & UGS	1889	9.64	18.89	23.44	28/02	17.47	28/02	22.58
Little Brocklesby	C & UGS	1926	4.69	14.92	23.24	15/02	13.38	28/02	19.39
Washpit Farm	C & UGS	1950	40.51	44.17	48.04	01/02	42.47	03/03	49.39
The Holt	C & UGS	1964	84.03	87.16	91.08	28/02	89.26	04/03	92.33
Therfield Rectory	C & UGS	1883	dry <71.6	78.04	96.17	28/02	78.94	27/02	86.55
Redlands Hall	C & UGS	1964	32.47	43.11	54.01	12/02	42.01	11/02	49.24
Rockley	C & UGS	1933	dry <128.9	138.08	143.88	21/02	141.34	27/02	143.03
Little Bucket Farm	C & UGS	1971	59.34	68.47	86.87	25/02	76.32	02/03	84.64
Compton House	C & UGS	1984	29.60	48.19	64.50	23/02	50.96	22/02	57.52
Chilgrove House	C & UGS	1836	35.36	57.46	76.20	23/02	60.67	22/02	67.33
West Dean No.3	C & UGS	1940	1.19	2.28	5.03	26/02	2.25	25/02	2.68
Lime Kiln Way	C & UGS	1969	124.12	125.22	126.05	24/02	124.39	23/02	125.72
Ashton Farm	C & UGS	1974	64.84	69.54	71.15	26/02	70.51	28/02	71.18
West Woodyates Manor	C & UGS	1942	72.22	93.06	107.10	26/02	97.35	28/02	95.86
New Red Lion	LLst	1964	7.97	15.99	23.29	24/02	18.77	28/02	20.61
Ampney Crucis	Mid Jur	1958	100.17	102.25	103.27	08/02	102.33	27/02	102.57
Dunmurry (NI)	PTS	1985	27.99	28.44	29.28	25/02	28.23	22/02	27.59
Yew Tree Farm	PTS	1973	12.69	13.56	13.86	24/02	13.59	01/03	13.76
Llanfair D.C	PTS	1972	79.29	80.01	80.52	28/02	79.50	01/03	79.95
Morris Dancers	PTS	1969	31.75	32.51	33.52	16/02	31.90	08/02	32.10
Weeford Flats	PTS	1966	dry <88.61	89.75	91.25	05/02	dry <88.61	01/03	89.73
Stone	PTS	1974	89.72	90.54	91.53	01/02	90.40	01/03	90.99
Skirwith	PTS	1978	129.88	130.50	130.94	02/02	130.48	27/02	130.66
Redbank	PTS	1981	7.84	8.53	9.08	24/02	8.22	01/03	8.72
Bussels No.7A	PTS	1972	23.19	24.25	25.21	03/02	24.09	17/02	24.87
Rushyford NE	MgLst	1967	65.32	72.23	76.84	28/02	74.98	25/02	76.72
Peggy Ellerton	MgLst	1968	31.73	34.49	36.84	04/02	32.34	17/02	33.65
Alstonfield	CLst	1974	182.47	198.36	211.50	01/02	197.86	01/03	202.82

groundwater levels are in metres above Ordnance Datum

C & UGS	Chalk and Upper Greensand	Mid Jur	Middle Jurassic limestones
LLst	Lincolnshire Limestone	MgLst	Magnesian Limestone
PTS	Permo-Triassic sandstones	CLst	Carboniferous Limestone

Note: Table 5 has been redesigned to include both monthly minimum and monthly maximum levels.

FIGURE 3 LOCATION MAP OF GAUGING STATIONS AND GROUNDWATER INDEX WELLS