Water Resource Associates

A network of consultants in hydraulics, hydrology, groundwater & environmental issues

Project title: **Bristol Water inflow data**

Summary: The aims of the study were: (i) to provide a long term flow data base for resource analysis; (ii) to provide a model for statistical prediction of the consequences of drought.

Client: Bristol Water plc	**Financed by:** Bristol Water plc
Period of assignment: 2002-3	**Location**: Mendip Hills, West of England
Project Value: £13 000	**WRA services**: £13 000

⇪ Chew Valley Lake

⇪ Line of Works elevated section

Background

Bristol Water is responsible for supplying water to over one million consumers in the city of Bristol and surrounding areas. Most of their resources come from reservoirs fed by rivers, which rise in the karstic limestone of the Mendip Hills. In 1993, a previous project [not carried out by WRA] had provided a single global inflow sequence for all reservoirs. The client wished to update the flow sequence and to have flow data for each individual source.

Scope of Work

Water Resource Associates ordered and quality controlled all the meteorological data needed for flow simulation. WRA also quality controlled data on storage and water supplied to calculate "observed" inflow for each reservoir. One particular flow sequence was unique to this project - the "Line of Works". This had been constructed in five separate parts, partly tunnelled and partly as an aqueduct, in the mid-nineteenth century and captured water by gravity from a number of springs.

Results

A daily flow record was prepared for each of the seven inflows for the period 1910 to 2002 using the HYSIM rainfall/runoff model.

In addition, as part of the contract, a new feature was added to HYSIM. This allows the model to be run with different statistically derived droughts for the future. The user can choose the start date, duration and return period. This enables an assessment to be made of the risk of system failure and to decide on appropriate actions.

Project Number 000099

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