Bewdley gauging station 1921-2013

Hydrometry and Telemetry

Bewdley gauging station is a hydrometric monitoring gauge on the River Severn. It was one of the first open channel flow gauges in the UK. The flow record dates back to 1921, making it one of the longest records of discharge on the National River Flow Archive. Bewdley was owned by the Imperial College of Science and Technology, Civil Engineering Department until 1963, when ownership transferred to Severn Catchment Board.

Catchment Area: 4325 km²
NRFA station number: 54001

1959 - A hydrological survey of the Severn Basin carried out by the Surface Water Survey of the Ministry of Housing and Local Government. Concluded that the River Severn had limited water resource capability of further exploitation to address the Severn River Board's concerns in maintaining adequate minimum flow during periods of dry weather.

1963 - Clywedog Reservoir Joint Authority Act was passed establishing a single authority responsible for developing a river regulation scheme.

1964 April - Construction work on Clywedog Dam commenced at Brynfall Gorge. The reservoir began to fill in December 1966 just 33 months after construction work began.

1969 - First year River Severn regulation support was required from Clywedog reservoir.

1991 - Following a period of testing a cross path USAP ultrasonic system was installed. New transducers were installed and aligned at this time. Initial the upper paths remained as reflectors.

2003 - Ultrasonic gauge was upgraded to a Sondaco 200 flow meter. New multi-drop 500 kHz transducers were also installed.


2009 - Advances in Acoustic Doppler technology allows the bed level of the ultrasonic measuring section to be determined and programmed into the ultrasonic gauge.

1921 - First experimental current meter gauging. Measurements made from either pontoon or cable suspension at 4 straight sections where on present day ultrasonic gauges is located.

1947 March - The most severe flooding of the 20th Century was recorded on 21st March 1947. An exceptionally cold winter, saw a series of snow events without any thaw over the catchment. Widespread flooding was triggered following a rapid thaw caused by heavy frontal rain that coincided with a rapid rise in temperature. A peak flow in excess of 650 m³/s was recorded at Bewdley and remains the highest flow on record.

1948 March - Chart recorder replaced by a 10½ range instrument manufactured by L. Reed Bower Company.

1968 - Telemat installed at Bewdley providing the first remote access to water level data via a telemetry system.

1976 - The River Severn Drought Order

Drought order Part 1 Granted on 6th August 1976 Severn statutory minimum flow was lowered to 545 Mld and compensation released (15 Mld) from Clywedog dam ceased to be made for 6 months.

Drought order Part 2 Granted on 3rd September 1976 Abandon statutory storage for 2% of remaining Clywedog storage per day subject to Bewdley not exceeding a flow of 545 Mld.

1978 - Bewdley residual regulation flow changed to a 5-day average of 650 m³/s

1982 - Due to weed growth at the section control and the increased requirement for accurate low flow measurements to control River Severn Regulation. An ultrasonic flow gauge was installed in February 1982.

The first ultrasonic gauge consisted of 14 individual paths, with both arrays located on the left bank and reflectors on the opposite banks. The first reflector system was installed in the UK. The lower paths forming a triangular configuration with higher paths perpendicular to the river.

2002 to 2006 - Following the devastating floods in 2000, the Environment Agency designed a £500m long flood defence system to protect 175 properties in Bewdley from flooding. To maintain access to the historic quayside, the scheme incorporated demonstrable flood barriers that can be removed when high river levels subsides. The barriers were the first of its type to be constructed in the UK. Following completion in 2002 Bewdley gauging station took on further importance, have operational storm thresholds set to trigger erection of the different flood defences at demonstrable barriers at pre-set river thresholds.

2004 - Severn side north barriers deployed along the quayside on 7th February 2004.