

3. Use of rainfall data from flow surveys.
M. N. Gooch, Southern Water Authority

Synopsis:-

This paper discussed criteria which have been used for selecting measured storm events to be used for verification of sewerage systems modelled on WASSP. These include - which storms to select, typical rainfall intensities and flow response in the system.

Some problems experienced using selected rainfall data for current WASSP investigations were discussed together with conclusions on the significance of these problems on verification of a catchment, by comparing flow hydrographs from various rainfall hyetograph inputs.

Discussion:-

J. Packman, Institute of Hydrology.

Referring to the case of a long storm of low intensity with a final short period of high intensity, agreed that only the final high intensity period should be used to derive rainfall inputs.

A. R. Eadon, Severn-Trent Water.

Suggested that a time lag of one hour between observed and predicted hydrographs may be a result of raingauges or flow monitors being incorrectly set to Greenwich Mean Time or British Summer Time.

M. N. Gooch.

This had been checked and found not to be the problem.

R. Chapman, WRc Engineering.

Extreme rainfall events are ideal for verification as they test the accuracy of the model in similar events to those used for designing upgrading solutions.

M. N. Gooch.

Such events may be used but system losses due to flooding can lead to inaccuracies.

D. Dring, Severn-Trent Water.

Recommended the use of rainfall spatial variation addition to WASSP which permits a number of rainfall hyetographs to be read in and assigns each pipe in the system to a particular hyetograph.

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Synopsis:-

See Bristol meeting notes.

Discussion:-

P. Shelton, Severn Trent Water Authority.

- a) If two storms show conflicting evidence, e.g. one shows WASSP over-estimating flows and one under-estimating, what procedure should be followed?
- b) Mr. Gooch referred to a flow survey which was still continuing after 12 weeks of dry weather. Is there a policy on the maximum length of contracts?

M. Gooch.

- a) The problem referred to has been encountered. There are no definite rules but the sewer system data should be re-examined.
- b) The duration of a survey is limited by financial constraints. It may become necessary to use events which do not meet the specified criteria.

N. Orman, WRC Engineering.

- a) Would it not be preferable to use a real event rather than averaged events from a number of raingauges for an input rainfall hyetograph?
- b) It would appear that the eastern part of the UK regularly experiences dry periods in the early months of the year. Should flow surveys be avoided in these areas at these times?

M. Gooch.

- a) The information was used in the format presented by WRC Engineering and resulted in reasonable fits between measured and predicted hydrographs. However, more detailed examination of rain gauge information is needed when there are significant differences over the catchment.
- b) This is not always possible because of programming difficulties.

D. Walters, Bolton MBC

Averaging rainfall results in reduced peaks and longer durations. It is preferable to use a recorded event. Does WASSP reduce intensities input in the rainfall hyetograph?

G. Wooldridge, Hydraulics Research Ltd.

Averaging rainfall may still be the best approach if time lags are adjusted to make peak intensities coincide. WASSP will not reduce rainfall hyetograph values if the aerial reduction factor (ARF) is set to 1.

- A. Lewis, North West Water Authority.
There appears to be a second parameter within the package which smoothes peakedness and cannot be amended by the user.
- J. Packman, Institute of Hydrology.
This effect should occur since the average rainfall over a catchment will be less than that measured at any point.
- J. R. Blanksby, Oldham MBC.
Described a flow survey for a 700ha catchment incorporating 10 raingauges. Over a period of 2 or 3 hours there was a 50% variation in rainfall volumes. Also a double-peaked storm resulted in different peaks being higher in different parts of the catchment. It is obviously unreasonable to average such information, and preferable to determine zones of influence for individual raingauges.