

EXPERIENCE WITH STORM OVERFLOWS

Mr. R. Chaplin
Doncaster Metropolitan Borough Council
Colonnades House
Duke Street
Doncaster

Tel: Doncaster 734924

This paper relates to experience gained when using WASSP-SIM to analyse an existing drainage area served by a Combined Sewer and a Surface Water Sewer, each outfalling into independent Pumping Stations. The Combined Sewer having eight Storm Overflows which discharge their spillage to the Surface Water Sewer.

Analysis of the data for one of the Storm Overflows forms the basis of discussion. The layout of pipes connected to the Storm Overflow is shown in Fig. No.1.

The Discharge Hydrographs of Foul Sewage flows are shown in Fig. No.2, the flow into the S.W.O. (1.340), the carry-on flow (1.350) and the Storm Overflow Spillage (18.010). The decrease in discharge in 1.350, after approximately 40 mins. is due to the surcharge in the pipes downstream, this causes a corresponding increase in the Storm Overflow spillage (18.010).

The flows in the Surface Water sewers are shown in Fig. No.3. The sum of flows in Pipe Nos. 3.200, 21.020 and 18.010 equals that in Pipe No. 3.210.

Observations of water levels in the Surface Water Sewers show good correlation (fig. not enclosed) as do the water levels in the Foul Sewer Fig. No.4. The difference in water levels between Pipe Nos. 1.340 and 1.350 being attributed to the spillage flow over the S.W.O. Weir. However, a problem becomes apparent when one observes the water level in the Surface Water Sewer. Pipe No. 18.010 which is higher than that in the Foul Sewer (1.340).

This occurs because flow reversal through a Storm Overflow is not permitted by the programme. This can be seen when the discharge hydrograph for Pipe No. 18.010 is superimposed onto Fig. No.4. When the water level in the Surface Water Sewer exceeds that in the Foul Sewer, discharge over the S.W.O. weir ceases.

The implications are that the Flows in the Surface Water sewer are being artificially exaggerated the converse being the case in the Foul Sewer and hence is not a true representation of the actual flow regime.

Recommendation

That Discharge and Level hydrographs are produced for all pipes connected to a Storm Overflow and are examined to see if the surcharge level in the S.W.O Spillage Pipe reaches that in the Foul Sewer, if so then the S.W.O. Spillage ceases and the results from there on become invalid.