INFLOW AND INFILTRATION STUDY OF SEWERAGE SYSTEMS IN KUANTAN, PAHANG

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ABSTRACT

Sewerage system is the sole infrastructure which conveys sewage to sewerage treatment plants. The usage of a sewerage system should be optimized at the design stage to enhance environmental protection and human health. Wastewaters flows are produced from domestic sewage whereas inflow and infiltration come from surface runoff and groundwater. The purpose of this study is to identify inflow and infiltration in sewerage systems around Kuantan. This study was conducted in residential catchments at Taman Lepar Hilir Saujana and Bandar Putra with population equivalent of 1253 and 1694, respectively. The calibration of the ISCO 2150 and 4250 Area Velocity Flowmeters were done before the start of the research. ISCO 674 Rain Gauge was used to measure rainfall intensity. The wastewater flowrate data was measured at 5-minute intervals and analyzed separately for wet and dry period. Infiltration rate was obtained by comparing the upstream flow and downstream flow from the two selected manholes. Based on the result, the average infiltration rate for both locations were 23,500% higher than the 0.05 m^3/mm-diameter/km-length/day stated in Malaysian Standard for Sewer Design MS1228:1991 Clause 3.7. Inflow and infiltration is a concern and more comprehensive studies are needed to initiate the review of a revised infiltration rate that is more relevant to the future climate.

Keywords: sewerage system, infiltration rate, inflow, surface runoff, groundwater