

## **ABSTRACT**

### **STUDY ON THE EFFECTIVENESS OF GRAHA BUNGA HOUSING DRAINAGE TO OVERCOME FLOODING DUE TO THE OVERFLOW OF THE ANGKE RIVER**

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The Angke River tributary is next to the Graha Bunga housing complex in the Pondok Kacang Barat subdistrict. However, there is an issue with the drainage outlet system at the complex. There isn't a sluice gate, so the water in the channel cannot be released, causing it to overflow onto the street. As a result, mitigation is required. The purpose of this study is to evaluate the extent of flood runoff and the efficacy of drainage through the use of water pumps, sluice gates, and embankments. This study used the Nakayasu Synthetic Unit Hydrograph (HSS) approach for discharge return periods of 2, 5, and 10 years, hydraulics simulation with the HEC-RAS 1D-2D coupled application model, and hydraulic analysis with SWMM 5.2 to assess the efficacy of drainage. The SWMM 5.2 simulation results demonstrate that backflow from rivers can be prevented by using sluice gates and water pumps with a 0.5 m<sup>3</sup>/s water pump capacity and effective handling at a height of 2 m with a runoff area of 12,115.16 m<sup>2</sup> with a 2-year return period, 11,495.63 m<sup>2</sup> with a 5-year return period, and 27052.59 m<sup>2</sup> with a 10-year return period.

**Keywords:** Flood, Mitigation, EPA SWMM, HEC-RAS 1D-2D Coupled model, Drainage, Sluice

Libraries : 18

Publication Years : 2014 - 2024