

ABSTRACT

DESIGN STUDY OF RAW WATER TREATMENT PLANT ON RESIDENTIAL SCALE (Case Study Of Kelurahan Pejagalan Jakarta Utara)

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This study aims to design a residential-scale raw water treatment plant with a case study in Pejagalan Village, North Jakarta. The background of the study is the challenge of the availability of clean water in the area, especially due to brackish groundwater conditions that are difficult to treat. The method used involves a Portable Water Treatment system with natural materials such as zeolite, cotton, coconut shell charcoal, and gravel. The research was conducted through primary and secondary data collection, as well as laboratory testing to measure the physical and chemical quality of water before and after treatment. The results showed a significant decrease in physical and chemical parameters, such as Total Dissolved Solids (TDS) with a decrease of up to 90.1%, manganese dissolved by 16.5%, and nitrite by 77.4%. However, there was an increase in total hardness and chloride content of -1.85% and -28.6%, respectively. This study concludes that the installation of Portable Water Treatment can be an alternative solution that is economical, environmentally friendly, and can be applied in areas of clean water crisis.

Kata Kunci : *Portable Water Treatment, Brackish water, Statistical Package for the Social Sciences (SPSS).*