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Treatment of POME Final Discharge Using Napier Grass in Wetland System

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Abstract. POME is the most expensive and difficult waste to manage since it was generated in large volume in tons at a time. POME usually will discharge to nearby land or river since it is the easiest and cheapest method to disposal. Since the POME final discharge quality still not meet the river water quality, the approach that will use is the wetland system. This wetland system is more compatible compare to another system to treat the POME final discharge since it is more cost efficient and fewer side effects compared to the biological and chemical approach. The system in this study contains a few ponds that is connected to serial form. Each stage serves a different purpose like the phytoremediation pond. Phytoremediation is a process that uses plants to degrade and remove contaminants from the environment. Phytoremediation can degrade, remove, transform, or immobilize toxic compounds located in soils, sediments, and more recently in polluted ground water and wastewater in treatment. The plant that been use in this system is the Napier Grass. At the end of the experiment, this system shows good quality water by reducing the level of COD by 71.57%, TSS by 83.59% and ammonia by 85.97%. From this research, it has been prove that the wetland system can reduce the contamination from the final discharge to meet the river water quality.

Keywords: Final discharge, wetland, phytoremediation, Napier grass.