

AN ABSTRACT OF A THESIS

PHOSPHORUS REMOVAL FROM WASTEWATER USING GREENSAND MEDIA

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Over the past few decades, eutrophication of fresh water systems has been a major issue of concern and phosphorus (P) was identified as the most limiting nutrient which caused it. In order to circumvent this, the USEPA has imposed stringent limits on phosphorus concentration levels in wastewater treatment plants which consequently led to an extensive research with the quest for a suitable, inexpensive, and efficient treatment technique that met the plant's effluent P discharge levels. This research was focused on testing the efficacy of greensand in the laboratory to remove P from aqueous systems. A simple linear isotherm described the batch isotherm data adequately and statistical analysis of these data showed significant differences in the amount of P adsorbed onto greensand as the pH, ORP, and influent P concentrations were varied. The K_d values for oxic experiments were significantly higher than that of the anoxic experiments. The maximum K_d value (0.0197 L/g) was at pH between 6 - 7 under oxic conditions. Porosity and the hydraulic conductivity of greensand were measured.