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NUTRIENT REMOVAL IN A WET DETENTION POND WITH BAFFLE DIKE – A CASE STUDY OF THE CEDAR RIVER PROJECT

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Abstract

The City of Jacksonville, Florida USA is in the midst of an important program to reduce nutrient load from its municipal storm water system. New regulations promulgated by the US EPA and State of Florida have targeted nutrient reduction within the St. Johns River watershed which includes most of the City of Jacksonville. In order to reduce overall nutrient loads to the St. Johns River, the City of Jacksonville and its consultant team have begun a construction program to build a series of wet detention storm water reservoirs designed to attenuate storm runoff and reduce nutrient discharge. One such facility lies within the Cedar River watershed which is connected downstream to the St. Johns River. This paper describes the layout of the facility and its nutrient removal performance over a period of more than one year. The storage and treatment facility is unique in its design since it includes a longitudinal baffle dike designed to extend the flow path and increase the overall residence time of the facility. The actual nutrient removal performance of the specially-designed facility greatly exceeded its design goals and outperformed other typical wet detention facilities in Florida as well as many storm water treatment wetlands. Overall, the pond removed approximately 31% of total nitrogen, 59% of total phosphorus, and 83% of total suspended solids during the study period.

Key words: storm water detention, baffle dike, nutrient removal, wet pond

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