

Public Abstract

First Name:Jacob

Middle Name:M

Last Name:Novak

Adviser's First Name:Enos

Adviser's Last Name:Inniss

Co-Adviser's First Name:

Co-Adviser's Last Name:

Graduation Term:FS 2013

Department:Civil Engineering

Degree:MS

Title:Optimization of Soil Mixtures in Bioretention Cells to Reduce Nutrient Loading to the Environment from Storm Water

Bioretention cells are used as a way to remove some pollutants and particulate matter from stormwater. The bioretention cell has limited treatment of phosphorous. To help with the uptake of phosphorous, drinking water treatment plant residuals (DWTRs) from Missouri were added to bioretention cell soil mixes. The DWTRs tested included lime, ferric chloride, polyaluminum chloride, and aluminum sulfate. It was found that the DWTRs can sequester 15 to 40 milligram phosphorous per gram of DWTR when tested alone of the bioretention mix. When added to the lab-scale bioretention cell the removal efficiency was approximately 54% (lime), 87% (ferric chloride), and 99% (aluminum sulfate) at 5% DWTR addition (by volume) to the bioretention mix with 6.2 mg/L of phosphorous in the influent water for 3 hours.