SLAPPM TEST: AN EASY METHOD FOR A SIMPLE LIMESTONE ALKALINITY PRODUCTION PREDICTION AND MONITORING TEST FOR VERTICAL FLOW POND TYPE SYSTEMS[1]

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Abstract. Limestone is one of the principal materials utilized in passive systems to treat acid mine drainage due to its relatively large percentage of calcium carbonate (CaCO3) content. When the limestone is placed in contact with acidic water it dissolves into ionic "species", neutralizing acids and raising the pH in order to hydrolyze and precipitate metals. Since chemical and physical properties can vary greatly among different mine discharges as well as different kinds of limestone, it is highly recommended to perform a test to predict the alkalinity generation of the particular water to be treated with the specific stone to be used before designing the passive system. Although the "cubitaner" test has been proven to be a very useful indicator for the alkalinity generation of an anoxic limestone drain its results are somewhat limited for other types of systems and purposes. Through the use of a Simple Limestone Alkalinity Production Prediction and Monitoring (SLAPPM) Test, not only could the amount of alkalinity production and acid neutralization be roughly predicted per hour for an individual vertical flow pond type system, but the data can be plotted similar to a regression analysis curve and utilized to determine how well a system is functioning over time and to what degree or amount of effective contact time with the limestone is occurring within the system.

Additional Keywords: vertical flow ponds, passive treatment system, alkalinity production, limestone dissolution

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