Anoxic limestone drain for treatment of highly acidic water

ABSTRACT

Limestone has been widely used in the treatment of acidic water due to its capability of neutralizing acid and removing metals in water. This study investigated the efficiency of limestone treatment in treating acidic water in anoxic limestone drain at a laboratory scale. The anoxic limestone drain was basically designed to enhance limestone dissolution and alkalinity generation thus minimizing the potential of armouring, which may decrease the rate of acid neutralization. Actual raw water samples from two different locations within Sg. Bekok catchment which were highly acidic with low pH values were used in the experiment treated by 30 mm diameter of 112 kg of limestone. The conditions under which the pH increases, acidity decreases, alkalinity produced and metals were removed in the anoxic limestone drain have been determined. pH was significantly increased from initially 3.27ï 4.09 to 6.49ï 6.67 after flowing through the anoxic drain in 10 min of contact with the limestone. Acidity was reduced from 73ï 99 mg/L as CaCO3 to 17ï 19 mg/L as CaCO3 as pH were raised to reach near neutral levels. Iron and aluminium were also being removed in the anoxic limestone drain.

Keyword: pH rise; Acidic water; Anoxic limestone drain