

Abstract

The development of rapid sand filtration without a backwashing system was carried out by using an upflow filter unit composed of a removable prefilter that can be easily cleaned outside the filter. A rapid mixing chamber, flocculator, and inclined tube settler were assembled together with the filter as a model of surface water treatment plant. The overflow rate of upflow filter during the investigation ranged from 1.53-6.14 gpm/ft². Sand washing was conducted by draining out filtrate over the sand bed to the bottom of filter box. The result showed that an efficiency of upflow filtration system was maximized at the overflow rate of 3.10 gpm/ft², namely; the turbidity in raw water was reduced from 150 JTU to 0 JTU. after passing through the sand. The system also spent less washwater volume than a conventional backwashing system.