

Groundwater quality improvement by using aeration and filtration methods

ABSTRACT

An experiment was conducted using two aeration methods (water-into-air and air-into-water) and followed by filtration processes using manganese greensand material. The properties of groundwater such as pH, dissolved oxygen, turbidity and heavy metal concentration (iron and manganese) will be assessed. The objectives of this study are i) to determine the effective aeration method and ii) to assess the effectiveness of manganese greensand as filter media in removing iron and manganese concentration in groundwater. Results showed that final pH for all samples after treatment are in range from 7.40 and 8.40. Both aeration methods increased the dissolved oxygen content. Final turbidity for groundwater samples are between 3 NTU to 29 NTU. Only three out of eight samples achieved iron concentration of 0.3mg/L and less and all samples reach manganese concentration of 0.1mg/L and less. Air-into-water aeration method gives higher percentage of iron and manganese removal compare to water-into-air method.

Keyword: Aeration; Filtration; Groundwater; Water quality