

Name : Mr.Preecha Singhkra
Thesis Title : Artificial Groundwater Recharge to Alleviate Flooding Problem in Bangkok
Major Field : Civil Technology
Thesis Advisor : Mr.Sunchai Inthapichai, Mr.Kait Thuethongchai, Dr.Padet Sidisunthorn
Academic Year : 1997

Abstract

This study investigated the possibility of artificial recharge of surface water into confine aquifer by deep well injection. The study was conducted at Sikan reservoir, Muangtong housing estate, Bangkok. The study covered the characteristic of underground sand layers, recharged well and efficiency of water recharged. Water was injected by gravitational force. As well as pumps the result from this study, the artificial recharge could be alleviate flooding problem in Bangkok.

The study showed that the sand layer at 30-50 meters depth was a poorly graded sand, with the permeability of 0.013 centimeters per second.

The rate of water injected into the sand layer by gravity through pipe of 6 inch diameter was 60.53 cubic meters per hour at the beginning and declined to about 49.79 cubic meters per hour after 40 minutes of continuous operation, and through a pipe of 2 inch diameter was 19.50 cubic meters per hour at the beginning and declined to about 12.15 cubic meters per hour after 260 hours of continuous operation. It was found that the reduction of the recharge rate was caused by clogging of the sand layer around the recharge well which reducing the permeability of the sand.

After 3,769 cubic meters of water was injected into the sand layer, the groundwater level was unchanged. It is proved that the volume of water recharged was negligible comparing to the capacity of absorption of underground sand layer. Therefore, it is possible to use this artificial groundwater recharge in Bangkok, by recharging filtered rain water into confine aquifer in order to minimize the problem of clogging.


Committee Chairperson