

THE MECHANISM OF GROUND WATER SALINIZATION AND ITS 3-D SIMULATION IN YAOBA OASIS, INNER MONGOLIA, CHINA

1QIU HANXUE, 2WANG BINGCHEN 1Dept. Of Construction & Environment, Ocean University of Qingdao, China; 2Comprehensive Institute of Geotechnical Investigation & Surveying, Beijing, China

Yaoba Oasis located in the Northwest arid area of China has contributed greatly to the local economy since 1970. However, The groundwater that the oasis depends on has been salinizing seriously in recent years. The saline groundwater in the Taosu Lake at the southwest of the oasis was preliminarily regarded as the main source of groundwater salinization. By the method of isotope investigation, lithofacies and paleogeography investigation, water-rock interaction calculation, it was found that the salinization of groundwater is mainly caused by reinfiltration water solved the salt in cultivated soil and residual salt in vadose zone. Density flow in the undeveloped season plays a definite role TDS movement in the oasis was simulated with HST3D model. A good result was obtained and it is proved that the reinfiltration of irrigation water is $3\text{--}4 \times 10^5 \text{m}^3/\text{a}$ in 3 main spots within the oasis. The basin irrigation manner, winter irrigation to wash salt, the increase of wheat planting, no amount limit to water user (the farmer) are the main factors of water consumption increase as well as the reinfiltration. The groundwater salinization curing measures should include the reasonable irrigation scheme, water use limitation, flood utilization project, saltwater discharge and seal the upper layer to avoid the saline water entering pumping well.