

Characteristics of ground water under the central Osaka

*Naoko Kitada¹, Hiroko Ito¹, Tomoo Echigo¹, Fujiwara Teruyuki¹

1. Geo-Research Institute

On the west side of Osaka plain, several clay layers accompanying repeated sea level change accumulate in layers, and the gravel layer between the clay layers forms a submerged aquifer where abundant underground water resides. On the other hand, due to the severe ground subsidence caused by the massive pumping up of factory water in the 1960s, pumping is currently strictly regulated. However, in recent years, especially in Osaka city, consideration is being made on effective utilization of groundwater, such as the promotion of underground water use project as regenerative thermal energy. Therefore, we conducted survey of water level, water temperature, and water quality using existing observation holes near Nakanoshima from around Osaka Station for the purpose of acquiring background data on the properties of groundwater at the present time. The aquifer covered in this study is a sand gravel layer (1st aqueduct layer: Dg1) distributed beneath the clay layer (Ma13) of the Holocene, and the gravel layer (the second caught aquifer: Dg 2) distributed under the clay layer (Ma12). Regarding the water quality, we analyzed the composition of the principal components etc. for groundwater sampled 4 times in total in June, September, November 2016 and January 2017. As a result, it was revealed that both Dg 1 and Dg 2 were reductive and showed a Na - Cl type water quality composition, especially Dg 1 had a higher salt concentration. In addition, mineral composition analysis (XRD) of the fine grains obtained when filtering with a membrane filter of 0.45 μm was carried out, and it was found that amorphous iron oxide was included together with detrital grains. The abundance and the mineral composition of such fine particles present in the groundwater are important information in searching for effective use of groundwater in the future.

Keywords: ground water, borehole, database, water quality