

Aquifer division and distribution in the deeper part under the Osaka Plain-Etablissement of 3-D groundwater flow model-

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In the Osaka Plain, deep groundwater is pumped up for natural hot spring bath facilities in high volume from the Miyakojima Formation (the Lower Pleistocene). The total volume comes up to about 9360 m³/day. It is important for the sustainable utilization to make clear the hydraulic performance on the deep aquifers. In this study, the aquifer properties and distribution on the Miyakojima Formation is evaluated by deep well logs and re-analysis of pumping tests. The aquifers of the Miyakojima formation are divided into 3 zones (zone L, M, and U, in ascending order) with lithofacies. The hydraulic conductivity in the northern part in the Osaka Plain is higher than the southern part along with the horizontal change of the lithofacies. A 3-D groundwater flow model built with aquifer properties and Quaternary geologic structure. As a result, The differences of groundwater level between calculation and observation is within 5m. The water level trend in westosaka is lower than eastosaka. The trend of the water level in Osaka City region is that southern part is high and Northern is low, there is influenced pumping from shallow part. Pumping or not from deeper part under calculation condition makes the water level difference about 9-10m. The setting increases the number of deep wells to 1.5 times, the water level is decrease about 2m in each aquiferzone.