

A Resistivity Distribution of the Thermal Springs with Deep Boleholes in Osaka Plain

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1. Introduction

A vertical electrical prospecting's was done using the dipole dipole method along Yamato River in the center part of Osaka Plain (RYOKI et al. (1994) and RYOKI (1995)). 380m in depth, the resistivity indicates 3.8ohm_m and a low value though this inquiry depth is roughly 1000m. Salts contained in the deep hot spring water drawn up from 1200m in depth as a cause of this low resistivity are thought. Tsurumaki and Masuda (1987) showed the idea assumed that deep underground water, which contains such a lot of chlorides, is a fossil water origin. Then, the resistivity distribution of the deep hot spring water presumed from the dissolved solid by a lot of deep hot spring bores is described in this report, and the relation between this and an underground structure is considered.

2. Method

The resistivity was presumed from the amount of the dissolved solid of the deep hot spring water when chiefly digging based on Kawamura and Kon'no's (1994) method.

The resistivity distribution was inferred from 64 deep hot spring points under Osaka Pref.. Moreover, the distribution situation was examined about the water-intake depth and the main element. Many of these hot spring water is led to surface of the earth by the power pumping, and is pointed out that there is a change in the dissolved constituent and the temperature etc. of the fountain compared with digging in some points (Osaka Pref. public health laboratory annual report 1992-1999). Then, when compared in digging, 1997, and 2001, the change was admitted in the elements of the deep hot spring water in three places. Therefore, it was judged that it was suitable to use the analysis report when digging.

3. Result and consideration

Depth to obtain the deep hot spring water is shallow in the region which leads to Shinodayama Hill through Uemachi Plateau from the Hokusetsu region . It is deep in Kawachi Basin and Uemachi Plateau west. These seem to depend on geological structure of Osaka Plain (Nakagawa et al. (1991)). The relation between the water-intake depth and the geological structure is thought to be the significant one.

The hill part is high, and the inland part and Uemachi plateau west have lowered to the distribution of the resistivity. It is thought that the inland part and Uemachi plateau west are covered with the thick deposit, and the existence of the low resistivity water with the fossil water is suggested. It is assumed that underground water is made salt water according to the infiltration of the sea water in the Kamimachi Plateau west (Tsurumaki and Masuda (1987)). Nunoura et al. (1991) is assumed that this causes the strong salt fountain making about the deep hot spring water in the same region . Therefore, both of the fossil water and the sea water infiltration combine making of a low resistivity in Uemachi Plateau west.

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