

Integrated Geophysical surveys in levee excavation sites on the Chitose river, Central Hokkaido

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A levee excavation was conducted to construct a new sluice at two sites along Chitose River, Central Hokkaido. The high-density electrical resistivity survey and the surface wave survey were carried out on the levee at the crown and high-water channel before the excavation. The electrical resistivity and S wave tomography were also carried out across the levee at the excavation sites. After the excavation, the short electrode spacing resistivity mapping and the short spacing surface wave survey were carried out at the excavated slope surface to measure directly on the resistivity and S wave velocity (V_s).

The resistivity and V_s structures obtained by the surface surveys were verified by the resistivity and V_s distribution measured on the excavated slope surface. These surveys delineated inhomogeneity of soils in the levee and the basement. Comparing the resistivity and the grain size evaluated by soil tests, the resistivity structure identified a permeable zone in the levee and showed the extension to the basement.

Keywords: Integrated Geophysical Survey, Levee Survey