

The Horonobe Underground Research Laboratory project - Hydrogeological characteristic of the Neogene sedimentary rocks -

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Japan Nuclear Cycle Development Institute is advancing research of the technique of investigating and modeling systematically geological environment from surface of the earth to the underground depths for a sedimentary rock in Hokkaido Horonobe-cho. Among these, since a fracture may serve as a groundwater flow channel even if it is a sedimentary rock, construction of a hydrogeological structure model needs to estimate the relation between the distribution of a fracture, and the hydraulic permeability of a rock mass. This study considered synthetically geological investigation (borehole observation and core description) and hydrogeological investigation (fluid logging and hydraulic test), and discussed the hydrogeological characteristic of the rock mass in the research site.

Consequently, as the hydrogeological characteristic of the sedimentary rocks distributed over the research area, it was suggested as follows,

1) the Wakkanai formation is a rock mass with the low permeability zone which consists of a intact rock and the high permeability zone which consists of a fracture domain formed by faulting, 2) The Koetoi formation is a rock mass without the low permeability zone or the high permeability zone in a intact rock or a fracture domain, since not only a fracture but a rock matrix is considered to adequately function as a groundwater flow channel in this rock (a porosity is about 2 times of the Wakkanai formation), 3) the permeabilities of the both formations depend on a depth, and show a very low value at deep area (depth over about 500 m).