

## **Delineation of lithological formation in Bukit Merah, Semanggol, Perak using groundwater modelling**

### **ABSTRACT**

The knowledge of lithological formation is important to determine the potential aquifer for water resources management. This study aims to delineate the lithological formation of Bukit Merah, Semanggol using geological data. The preparation of lithological formation in the study was based on several factors such as electrical resistivity survey data, available well lithologies, geological map, and geological-related studies in the study area. The Electrical Resistivity Tomography (ERT) profile produced from the resistivity survey was interpreted based on previous studies to determine the subsurface materials on the location. The estimation of soil lithology for the remaining wells was done to generate the overall subsoil pattern in the study area. A total of 15 types of soil were classified to represent the actual lithology in the study area. The simplification of the actual lithology was carried out based on rocks and soils group. The elevation of the ground surface and each soil layer were imported into Visual MODFLOW software, then the interpolation of elevation points was done. Two interpolators; Kriging and Natural Neighbouring were used to generate ground surface and model layers similar to the topography in the study area. As a result, it has been identified that the study areas consist of 4 main layers of lithological formation which are unconsolidated deposit, sedimentary, metamorphic, and granite. The upper layer is dominated by unconsolidated with a maximum thickness of about 150 m in the coastal area. Hence, it is concluded that the unconsolidated deposit layer in Bukit Merah is highly potential with groundwater resources in the alluvium aquifer at the upper layer which has the potential to be developed for purpose of irrigation in a paddy field in the Kerian area.

**Keyword:** Lithological formation; Bukit Merah Semanggol; Groundwater model; Resistivity survey; Visual MODFLOW