

Identification of Near Surface Water Flow Path in Kanniya Hot Water Spring

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Although Sri Lanka is not located in an active volcanic region or in the vicinity of an active plate margin, the country possesses unexplored geothermal resources with potential for development as a source of renewable energy. As the present trend for geothermal prospects of low-enthalpy metamorphic terrains become a focus overriding conventional magmatic provenances, Sri Lanka is well placed to explore the same. Prospects for low to medium temperature geothermal resources can be expected to spread across the hot springs belt of Sri Lanka. Low to medium temperature geothermal resources have direct applications in food processing, fruit drying, refrigeration and recreational activities. Delineating the source characters of prospective geothermal fields in geological perspectives would be the initial step towards addressing this untapped energy source. Thorough geological mapping along with geophysical applications would pave the way for such source characterization. Geochemical analysis further provides necessary clues on the potential of the source, its provenance and temperatures. Among many geothermal fields that are scattered in the SE to eastern region of the island, Kanniya site was selected for this study. Objective of this study was to identify the near surface water flow path in Kanniya hot water spring which is one of the major hot spring fields located in Sri Lanka near Trincomalee. One-Dimensional and Two-Dimensional resistivity survey and magnetic survey were used for subsurface layer mapping of the area and the results were synchronized with the elevation model. The results showed that the flow path is in Northeast - Southwest direction line receiving from beneath a quartz hump. According to the topography of the area, water flow is towards the sea in Northeast direction. Therefore, it is possible to conclude that the near surface water flow path in Kanniya hot water spring is towards the Northeast direction. Presumably the quartz layer acts as a conduit for such flow, due to its high permeability character.

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