GEOLOGICAL PROBLEMS AND SOLUTIONS FOR WILAKANDIYA TANK UNDER CONSTRUCTION MAHIYANGANAYA - SRI LANKA

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Seepages and settlements mainly occur due to geological problems of dam foundation. Many tanks in Sri Lanka have been subjected to those problems. Effects of those problems must be considered while the construction of dams as well as at design stage. In this study, I expected to evaluate geological problems and solutions of Wilakandiya tank.

The data which are taken from the geological investigation such as RQD, Lugoen, core recovery and visual observations were studied in detail. Problems were identified using sketches, calculations, etc. The factors affected for identified problems were considered. Grouting is a given solution and it was also studied in detail.

In addition to that the MODFLOW-2000 software was used for analyzing of the seepage through the dam foundation. The geological data and tank survey data were used for the above analysis. A clay core and clay blanket was developed based on their width and depth. Width of core was selected to be 5 m, 10m and 10 m. Depth was selected up to 1st layer, 2nd layer and 3rd layer. Blanket width was selected to be 50 m and 75 m. Total of sixteen conceptual models were developed and ran them on software individually.

The results were the amount of seepages. They were converted to cubic meter per day per meter (m^3/day/m). These values were compared with each model. The fair model was selected considering the relatively low seepages, amount of seepage and practical condition.

It was suggested to remove top three layers such as over burden completely weathered, highly weathered and highly weathered to moderately weathered layers and set as core with 10 m width. Clay blanket is 50 m to upstream direction.

It can be save the water 25.68 cubic meter per day.