

## **Engineering Geology Study at Gentan Small Dam Plan in Sukoharjo District, Central Java**

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### **Abstract**

Development in agricultural areas, especially in Sukoharjo District conducted by agricultural intensification steps. One of the problems existing in several places in the region Sukoharjo district is drought and water shortages in the dry season especially during droughts. Taking advantage of terrain conditions on the basin area of hilly terrain to collect water when it rained and the water use during droughts. Small dam is an alternative water supply solutions that need to be planning to small dam engineering geological investigations aimed to determine engineering geological conditions throughout the area as the dam, around the intake, around the spillway and around the pool, determine the placement and small dam body building supplements, knowing the quantity, quality and location and availability of construction materials carrying capacity of land small dam foundation.

Research method used is a survey method of geological mapping techniques, descriptive methods to make the bore hole description and a qualitative analysis method for small dam design parameters which include the cross-section analysis of the surface of the foundation, feasibility analysis, construction materials and land carrying capacity. While quantitative methods to calculate the volume of the availability of construction materials by using the grid method.

Based on the analysis and field test results of core drilling at the site-1 Bore Hole, Bore Hole Bore Hole -2 and -3 with each depth 5m, 15m and 10m, can be known location engineering geological conditions around the puddle and foundations as well as supporting capacity small dam land. Based on geological analysis techniques, the carrying capacity of land areas where the candidate pool and small dam good foundation. But the foundation for Lu lugeon score > 5, then needed a curtain grouting as deep and 10 m deep consolidation grouting after 5 meters around 2:00-meter excavation to remove the rotting soil. Construction materials in the form of land situated in locations around the borrow area pools. Barrow clay sand hills located in the west with a volume of 23,352 m<sup>3</sup>, sand gravel along the river with a volume of 168 m<sup>3</sup>. As for broken rock riprap used in the hills of andesite to the east with a volume of 336 m<sup>3</sup>. In general, this pile of material fit for use for the foundation material.

**Keywords:** small dam planning, engineering geological investigation, design parameters