



Experimental validation of three dimensional consolidation Biot's model: the case of tailing of sulphur's floatation

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In South west Sardinia, the mining activity carried out until 1960 resulted in a number of tailing dams and minor waste deposits which stability conditions and contamination potential have not yet been established.

Furthermore the actual remediation trend in the mining areas is to remove the small waste deposits and to dispose the material over the larger tailing dams. The correct understanding of the consolidation processes induced by the applied loads in the tailing dams volume is necessary to evaluate the maximum amount of material that can be disposed on the tailing deposit, to establish the stability conditions of the dams and to estimate the volume of contaminated water that will come out from the tailing dams.

This work deals with the geotechnical tests realized to measure the parameters of the Biot consolidation model for the material produced by the floatation process of sulphur minerals. The applicability of the Biot model to this material has been validated by matching the prevision of the model with the experimental results obtained in a odometer test.

Afterward, it has been applied to simulate the effect induced on a tailing dam by the superimposed material.