

The Effect of Organic Matter on Shrinkage and Water Retention Behaviour of Organic Dredged Sediments

Stephen Chin-a-Moei¹, Leon A. van Paassen², Nor Hazwani Md. Zain¹, Claire, Chassagne¹, Cristina Jommi¹

¹Delft University of Technology, Department of GeoScience & Engineering,
Stevinweg 1, 2628CN Delft, The Netherlands.

Phone: +001-(480)-965-1075

E-mail: leon.vanpaassen@asu.edu

²Arizona State University, Center for Bio-mediated and Bio-inspired Geotechnics
P.O.Box 873005, 85287 Tempe, Arizona, United States.

ABSTRACT

Peatlands and organic soils in Delta areas suffer from continued surface subsidence. At the same time accumulation of suspended sediments originating from these peatlands leads to poor water quality. Many researchers attribute the majority of surface subsidence of peatlands to decomposition of organic matter, particularly as a result of aerobic oxidation during periods of low groundwater level. The sediments which settle in the ditches and lakes are regularly dredged and deposited in depots on peatlands. Spreading these sediments on land may slow down or partially compensate for surface subsidence. To improve the understanding of the ripening behavior and to quantify the efficiency of using dredged sediments to mitigate subsidence, an experimental study is performed analyzing the effect of organic matter and initial water content on the shrinkage and water retention behavior. Additionally, the formation of gas during the ripening process is investigated.