## DEL110 - Worms II

This project is an extension of DEL071 with focus from worms to worms plus vegetation. Accelerating the dewatering and consolidation process of fluid fine tailings and sediment management is a major challenge to the (oil sands) mining industry, as well as for optimization of beneficial use of sediments in the Netherlands.

Previous and on-going research showed that worms and vegetation can separately improve dewatering of oil sands tailings, comparably or beyond chemical flocculants (DEL071). This work intends to build on these encouraging results by supporting the testing the coupled effect of plants and worms together. The effort will be placed on understanding the mechanism behind dewatering and consolidation in this complex biological system. This interdisciplinary research project combines areas of expertise from numerous engineering and biological specializations including Deltares and Queen Mary University of London.

This project represents an excellent opportunity for cross-exchange of knowledge and experience between North America and Europe. The knowledge gained in this project will be instrumental in at least two pilot on-going projects in the Netherlands (Marker Wadden and Kleirijperij).

Using natural processes provides an industry with alternative treatment of tailings and dredged sediment, that is environmentally friendly, cost-effective and are aligned with other reclamation goals.

The project is sub-divided into three main tasks:

- Research at NAIT in Canada with Deltares support and supervision, particularely over worms. The resulting report is enclosed bellow.
- A memo from Deltares over how to best use the knowledge gained in parallel worm research projects in Europe to serve the original client of the technology. Final product pending for finalization.
- A scientific report from QMUL that consists on the acquisition and description of CT-scans of sediment with worms and vegetation. Final product
  pending for finalization.

## Research executed at NAIT with Deltares support:

The general conclusion is that worms and plants together deliver the best geotechnical results, in the order of 60kPa and 70% solids content for some combinations of worms and plants. For detailed information:

