

# Phosphate mine tailings storage cap and cover system

The Rasmussen Ridge Phosphate Mine Tailing Storage Facility was implemented as part of the on-going Supplemental Reclamation Action as a demonstration project. A 21.6 acre cap and cover system was constructed on the east flank of the South Dump, overlying a reclaimed area. The cap and cover system was designed to effectively eliminate surface water infiltration and potential runoff of trace concentrations of selenium contained in the waste rock.



### PROJECT DETAILS

Agrium/Nu-West Rasmussen Ridge Phosphate Mine

### LOCATION

Soda Springs, Idaho, USA

### PRODUCTS USED

BENTOMAT® CLT Geosynthetic Clay Liner

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### CHALLENGE:

There was no clay anywhere near the site and the climate was not suitable for an Evapo-Transpiration store and release design.

A composite design with a 40-mil HDPE geomembrane and standard GCL could be used, but would require welded seams, additional cost and time when the project was on a tight timeline.

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### **SOLUTION:**

BENTOMAT CLT was chosen because it provided a standard reinforced GCL, laminated to a 20 mil textured HDPE geomembrane. When deployed, this material provides an impermeable geomembrane layer combined with a secondary low permeability liner with self-healing and self-sealing characteristics, thus providing a composite liner installation in a single layer of material. Compared with constructing a cap with a two-product GCL and welded geomembrane system, this system saved the owner both material and installation costs, as well as eliminating the need for welding and testing the geomembrane seams. Lastly, the use of BENTOMAT CLT shortened the liner installation schedule.

### **RESULT:**

The cap system construction commenced in June 2012 and was completed in September 2012, ahead of schedule and under budget.

With the success of the 2012 Agrium Rasmussen Ridge Mine BENTOMAT CLT remediation project, combined with state regulatory approval of CLT as an effective cover system, several other Idaho phosphate mining companies are in the process of permitting and constructing similar cap systems over reclaimed areas.