

Multilayer Geogrid to Stabilize the Closure of a Wastewater Treatment Impoundment

PROJECT NAME: Mead Paper Mill

LOCATION: Phenix, Alabama

PRODUCTS: Tenax MS330 Geogrid

DATE: June 2001

ENGINEER: RMT, Inc



The Mead Corporation has considered closing unlined wastewater treatment impoundments, including a strong waste pond at the Mahrt, AL, mill. The Mahrt strong waste pond contains a mixture of spent liquor, fiber and some ash. In addition to receiving the occasional liquor spill material, the pond receives some storm water. The pond is frequently covered with some depth of water, and any exposed solids are typically weak and unstable.



The pond would be closed under guidelines promulgated by the Water Division of the Alabama Department of Environmental Management (ADEM). One requirement stipulates that any cap should maintain a minimum slope of 5 percent. For the 7-acre impoundment, this would require significant earth fill volumes. However, the guidelines allow some variance in the stipulated closure approach provided the closure method provides equal or better protection of the groundwater. Mead's proposed concept involved the use of ash as a construction material in covering the solids in place. Ash would be used as a fill to construct the cover incrementally by the landfill operator, without double handling of material. This would save significant construction costs and preserve valuable landfill airspace.

A demonstration project for the closure concept was performed using ash and a multi-layer geogrid for bridging the soft solids. The closure strategy was successfully

demonstrated and a closure concept developed to achieve:

- Facilitate preparation of future phase closure plan for the existing impoundment to comply with/ADEM's guidelines for industrial wastewater impoundments;
- Stabilize the existing ground surface of the impoundment with a multi-layered geogrid to prepare for the addition fill material for closure; and
- Utilize on site ash as a fill material to facilitate closure of the existing impoundment.

The use of a multi-layered geogrid to stabilize the existing ground surface of the impoundment to prepare for the addition fill material for closure was considered a success. With the geogrid reinforcement at the base of the ash layer, the geogrid was able to withstand heavy equipment and loads, which is critical for the short term and long term closure activities of the impoundment in lieu of earth fill.

At an economic standpoint, the amount of airspace saved for the Mill's landfill by using the ash fill was estimated to be around 126,000 cyds. The mill produces around 177,210 cyds of ash per year, which is about an 8 month savings of valuable landfill airspace, or a cost saving of approximately \$1.2 million. By using the on-site ash material in lieu of off-site earth fill Mead saved an estimated \$678,000.