

application | Dewatering / Filtering Drilling Sediments  
 location | De Pere & Manitowoc, WI  
 product | Geotube® Dewatering Technology

job owner | Michels Corporation  
 contractor | Lunda Construction  
 WaterSolve, LLC

TenCate™ develops and produces materials that function to increase performance, reduce costs and deliver measurable results by working with our customers to provide advanced solutions.

**THE CHALLENGE**

Lunda Construction was subcontracted by Michels Corporation to provide 35’ diameter down-shafts to facilitate the installation of a pipeline between the Manitowoc River and the Fox River in DePere, WI. Two 4” submersible pumps (approximately 500 gpm) were used to pump out water from each flooded shaft. Shafts were flooded on purpose to suppress explosive blasts in the rock of the down-shafts during excavation. A 40 mg/L total suspended solids (TSS) permit limit was issued for this project by Wisconsin DNR, limiting the liquid residuals to be discharged to any surficial receiving systems.

**THE SOLUTION**

Lunda Construction contacted WaterSolve, LLC (TenCate Geotube® Distributor) for technical assistance regarding containing the solids and ensuring the discharge limits were met. WaterSolve, LLC identified a dual polymer chemical conditioning program which would achieve or exceed regulatory requirements, along with Geotube® containers designed to fit the application and site needs. Lunda facilitated the construction of

appropriate bermed lay-down areas lined with clean rock at both the Manitowoc and De Pere facilities along with the use of a small barge at De Pere to contain all the solids in the Geotube® containers. With this technology, Lunda and Michels were able to contain and dewater a full year of residuals production into the onsite Geotube® containers at De Pere and two Manitowoc sites. Geotube® technology, with WaterSolve’s experience and chemical expertise, minimized the excavation and hauling costs. WaterSolve completed installation of the Geotube® containers, temporary piping, and polymer make-down & feed equipment.

Dewatering with Geotube® technology is a three-step process. In the confinement stage, the Geotube® container is filled with dredged waste materials. The Geotube® container’s unique fabric confines the fine grains of the material. In the dewatering phase, excess water simply drains from the Geotube® container. The decanted water is often of a quality that can be reused or returned for processing or to native waterways without additional treatment. In the final phase, consolidation, the solids continue to densify due to desiccation as residual water vapor escapes through the fabric. Volume reduction can be as high as 90 percent.



Manitowoc WI Geotube® Containers placed on lined, stone, dewatering pads to ensure proper drainage and maximize dewatering.



De Pere Geotube® container placed inside a barge, capturing filtrate, ensuring low NTUs and then pumped directly back into the Fox River.

Protective & Outdoor Fabrics  
 Aerospace Composites  
 Armour Composites

Geosynthetics  
 Industrial Fabrics  
 Synthetic Grass

## How Geotube® Dewatering Technology Works

Dewatering with Geotube® technology is a three-step process.

In the **filling** stage, the Geotube® container is filled with dredged waste materials. The Geotube® container's unique fabric confines the fine grains of the material.

In the **dewatering** stage, excess water simply drains from the Geotube® container. The decanted water is often of a quality that can be reused or returned for processing or to native waterways without additional treatment.

In the final stage, **consolidation**, the solids continue to densify due to desiccation as residual water vapor escapes through the fabric. Volume reduction can be as high as 90 percent.

### THE PERFORMANCE

Liquid drilling residuals (100,000 to 500,000 gallons) at 0.5-1.0% solids were chemically conditioned and pumped daily into the Geotube® containers. As a result of WaterSolve's site specific chemical conditioning program, filtrate from 30'x90' and 30'x50' Geotube® containers that were installed in Manitowoc, WI were utilized to contain and dewater 8 months of drilling residuals with less than 40 mg/L TSS in the filtrate. A key element in the release of water from drilling residuals is proper polymer mixing and injection to provide good chemical conditioning. A 30'x50' Geotube® container on a barge in the Fox River (De Pere, WI) is pumped periodically to a height of 6' to dewater and consolidate drilling residuals from an under river pipeline project. Geotube® containment and dewatering technology met State discharge permit limits and allowed for continuous operation of all drilling sites for the term of these projects. Geotube® technology along with WaterSolve chemistry systems provided a clean environmentally friendly solution allowing Lunda Construction to accomplish these projects within cost and environmental restraints.



Drilled Sediments are treated with a double chemical system by WaterSolve then sent to Geotube® containers.



Drilling under rivers with drilled sediments being pumped up to Geotube® containers.



Limited area for dewatering resulted in utilization of a Barge to provide the necessary lay down area.



Filtrate from the Geotube® container was tested and was clean enough to return to the natural waterway without further processing.



Step 1: Filling



Step 2: Dewatering



Step 3: Consolidation

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