

Case study:

City of Vaughan – Geotube® technology for storm pond cleaning

- Geotube®
- City of Vaughan
- Ontario, Canada

The challenge:

Removing sediment without disrupting operations

The City of Vaughan required sediment removal from three stormwater management ponds while maintaining normal pond operation throughout the project. The objective was to remove approximately 3,100 m³ of accumulated sediment with minimal disruption to surrounding communities, limited heavy truck traffic, and no adverse impacts on nearby watercourses.

The solution:

Hydraulic dredging with semi-passive Geotube® dewatering

Bishop Water implemented its Solids Management Solution by combining hydraulic dredging with Geotube® geotextile containers for semi-passive onsite dewatering.

A remote-controlled hydraulic dredge was deployed into each pond and guided using towlines in a systematic grid pattern to ensure complete sediment removal. The dredge pumped a slurry of water and sediment through a 6-inch pipeline to an automated polymer dosing system, where a powdered anionic polymer was precisely injected to optimize solids capture and dewatering performance.

The conditioned slurry was then pumped directly into strategically positioned Geotube® containers installed around the perimeter of the ponds.

As the slurry entered the containers, gravity-based dewatering rapidly released filtrate water through the high-strength woven geotextile fabric while retaining the solids. The Geotube® containers continued to dewater the sediment after pumping was completed, allowing the solids to further consolidate over time without requiring energy-intensive mechanical dewatering equipment.

Because the ponds remained in service throughout the project, no draining or temporary shutdown was required.



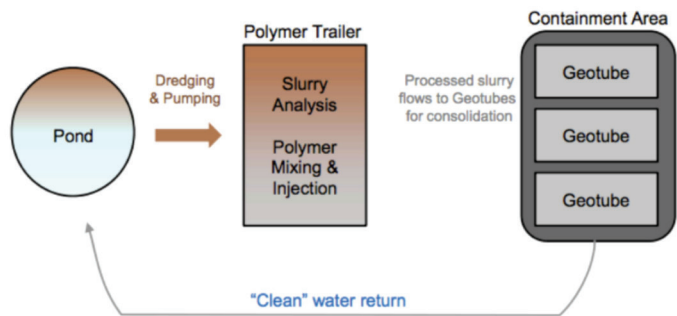
Representative Geotube® dewatering system in operation

Flow volumes and turbidity remained unaffected during operations, protecting downstream watercourses while minimizing environmental impacts and community disruption.

Pond	Sed. Vol. Forebay	Sed. Vol. Main pond	Total (m3)
1A	720	620	1340
1B	120	220	340
4	770	460	1230

After approximately one month of passive onsite dewatering, the sediment achieved approximately 80% dry solids, significantly reducing the weight and volume of material requiring transportation and disposal.

By dewatering and containing the sediment onsite, the project minimized heavy truck traffic, reduced hauling costs and associated carbon emissions, and avoided the need for large dewatering cells despite the limited space available around the ponds.



The Bishop Solids Management Solution used a two-layer, stacked arrangement of Geotube dewatering containers to minimize the footprint and cost of the dewatering cell.

The flexible Geotube® configuration allowed all sediment to be removed, dewatered, and contained onsite while maintaining continuous operation of the stormwater management system.



Representative sediment disposal operation

The results:

Reduced hauling, lower project impacts, and 80% dry solids

Approximately 3,100 m³ of sediment was successfully removed from the three ponds, with in-situ solids concentrations ranging from 9% to 22%. Higher-than-anticipated solids concentrations were observed within the forebays, where approximately 52% of the total sediment accumulation was located, highlighting the importance of routine forebay maintenance to preserve long-term pond performance.



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