

Stormwater Management Facility SMWF (Storm Pond)

City of Waterloo



The municipal client was searching for an innovative method to safely dewater and transport sediment sludge from a stormwater management facility SMWF (storm pond approx. 800,000 gal or 3,000 m³).

Location: Storm Pond 53, Waterloo, Ontario, Canada

Client Needs: The municipal client was searching for an innovative method to safely dewater and transport sediment sludge from a stormwater management facility SMWF (storm pond). One of the proper objectives was to remove many years of accumulated sediment from the storm pond (approx. 800,000gal or 3,000 m³) to reinstate the original design capacity and functional effectiveness.

Solution: The City of Waterloo required an integrated design & solution team and engaged both Greenland Engineering and Clearflow Group to develop the optimum solution. Prior to this project, the city of Waterloo Council directed staff to proceed with undertaking a Stormwater Management Program and Funding Review Study collaboratively with the city of Kitchener, Ontario, Canada.

A review of the storm water program at that time showed the city of Waterloo was struggling to meet provincial and federal regulations and guidelines for storm water management and operations and maintenance.

A concurrent assessment of all city-owned Storm Water Management Facilities (SWMFs) was also undertaken to determine both the current conditions of the facilities and if the facilities were continuing to meet their specified water quality and quantity control measures. Under the assessment, the existing Pond #53 was discovered to have accumulated around 800,000 gallons (or 3,000 cubic-meters) of sediment since installation. The high sediment



accumulation rate could be partially attributed to upstream development areas and because sediment had not been removed since assumption by the municipality. As a result, there were detrimental impacts on stream health.

During construction, it was discovered that the majority of the SWM Block base was founded on up to 5 meters of organic peat material.

Retrofit enhancements at Pond #53 were proposed by Greenland Consulting Engineers to improve sediment removal efficiency and achieve other benefits. The major benefit was the enhancement of sedimentation efficiency in the sediment forebay, resulting in improved water quality in habitat areas within the facility. Improved water quality is also attributed to the Greenland SWMF retrofit design. Pond #53 has been fully constructed and is operating. The storm pond was dewatered and treated for safe release using Clearflow's Patented flocculation treatment system.

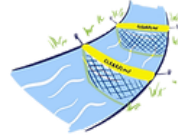
Products Used



**Gel Flocculant
Blocks**



PR 300



Treated Fabric



Granular

Clearflow Group's PR 300s were strategically located to treat the sediment laden water (high TSS – Total Suspended Solids) to accelerate colloidal sedimentation. The flow then passively traveled over Clearflow Group's Treated Soil Stabilization Fabric for final water polishing, capturing, and removing of the TSS for fish safe water release to the environment. This innovative process significantly highlighted the effectiveness and benefits using the Gel Flocculant Block and Granular for SWMF retrofits/cleanouts.

