

RESTORING UNDERGROUND DETENTION SYSTEMS

AQUALIS was called on to assess and restore stormwater systems at a restaurant after deficiencies were discovered during the city's annual inspection. The team addressed sediment buildup, drainage issues and compromised filtration to ensure proper system function and compliance with local stormwater regulations.

PROBLEM

Following an annual SCM (Stormwater control measure) inspection, multiple deficiencies were found that rendered the facility non-compliant with local municipal stormwater regulations. The property contains four SCM's: two underground detention systems and two underground sand filters. The underground detention systems are meant to temporarily store underground stormwater during rain events, which helps prevent downstream flooding. The underground sand filters treat stormwater by removing sediment, trash and pollutants before the water is discharged. They also help improve water quality and promote proper infiltration into the surrounding soil. Because these systems needed structural repairs, confined space entry was required.

The detention systems had accumulated over six inches of sediment and debris, which had prevented the systems from distributing water properly. Meanwhile, the sand filters were retaining water for up to four days after rain events, indicating impaired drainage and reduced pollutant removal. These issues were largely the result of insufficient maintenance over time. Without proper restoration, the clogged and damaged drains could have led to several problems. Excess sediment and debris reduce storage capacity, causing water to back up during storms, increasing the risk of localized flooding and property damage. Prolonged water retention could have also damaged the filter media and led to system failure. If these issues were not repaired in three months, the notice would have escalated to include fines.





SOLUTIONS

The AQUALIS team needed to restore full functionality to the stormwater systems at the location, ensuring proper drainage, effective filtration and compliance with local stormwater regulations. The scope of work included cleaning and repairing both underground detention systems and sand filters, addressing sediment buildup, structural concerns and compromised filtration areas.

The team started by implementing safety measures and mobilizing all necessary equipment to the site. The team performed cleaning on the underground detention systems to remove all sediment and debris, restoring proper water flow and system efficiency. The sand filters were pumped down as needed, and trash and debris were carefully removed from the surfaces. Hand tools were then used to agitate the top twelve inches of aggregate, reducing compaction to improve infiltration. Now that the sand filters have been restored to original design, they will not hold water for longer than 24 hours after a rain event.

During the inspection, AQUALIS observed that one side of the system lacked filter fabric, allowing unfiltered materials to bypass the system, while the other side had filter fabric and significant stone accumulation. Cleaning procedures were applied to both pre-treatment and secondary treatment areas, going beyond the original scope to ensure the system was fully restored.

After completing the restoration, the team performed general site cleanup, demobilized equipment and personnel, and ensured that all waste was properly disposed of at an appropriate offsite facility. These comprehensive efforts restored full functionality of both the detention systems and sand filters, improved water quality treatment and ensured compliance with local stormwater regulations.