

Best Practice

Town of Unity Waste Water Treatment Project- Soneera Water System

CONTACT

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THE PRACTICE

The Town of Unity's lagoon system was determined to be significantly undersized in January 2014. The Town of Unity entered into a Parallel Growth Agreement with the Province of Saskatchewan and committed to remedying the issue and increasing the capacity of its waste water treatment. Due to the physical location of the existing lagoon, availability of additional land, and estimated capital costs, a traditional treatment system was deemed to be unfeasible.

Soneera Water provided a system that is significantly less costly than another lagoon or other traditional treatment systems, and treats the waste water to a standard exceeding regulatory requirements. The Soneera MemFree System collects waste water from existing lagoon cell No. 2, utilizes and discharges the cleaned water into existing cell No. 3, after which it discharges into Sink/Gordon Lakes. The Soneera MemFree System is a fully automated, continuous flow electrolytic treatment process that applies ions rather than chemicals to treat waste water. A video on the project can be [viewed on YouTube](#).

THE PROCESS

Town of Unity council and management were involved in an intense review of waste water options. Mechanical treatment systems, SAGR lagoon systems, and the Soneera MemFree system were examined. The capital cost of Soneera's system was found to be only 44.65 per cent of the SAGR system, and 51.60 per cent of the capital cost of mechanical treatment systems. Soneera Water had not previously implemented a system for waste water treatment in Canada, and therefore the installation of a full-sized pilot system was commissioned by the Town of Unity, and an 18-month testing phase was completed by Soneera Water for the Water Security Agency. The Water Security Agency provided the Town of Unity a Notice of Intent to Alter A Permit to Operate a Sewage Works on September 6th, 2018.

There were several engineering companies involved in reviewing the existing waste water system, proposing alternative systems, and analyzing the results of the waste water system tests, including Walker Projects, McElhanney, Paradigm Innovations, and Resource Management International. Walker

Projects conducted the initial review of the state of the previous waste water system, McElhanney consulted in the preparation of the groundwork and site, Paradigm Innovations conducted the building and mechanical design, and Resource Management International conducted testing and analysis of the treated water samples.

There were several resources involved in the project, including the professional engineering companies, local contractors in the construction of the site and building, a lagoon dredging company, and the staff of Soneera Water.

The project and practice were developed by the technology's inventor, Dr. Vivian Robinson. The technology has been refined by Soneera Water in consultation with Dr. Robinson, and through the successful piloting and commissioning of the waste water treatment systems at the Town of Unity. The MemFree system at the Town of Unity is located on land adjacent to the Town of Unity's existing lagoon. The MemFree system was manufactured by Tecvalco Ltd. out of North Battleford and Lloydminster, and the site work, building, and related plumbing and electrical/instrumentation was constructed and installed by regional trades.

THE RESULTS

The effect of this project on the town of Unity has been to significantly improve the quality of the waste water being discharged into the environment by the existing lagoon treatment cells. The water, after treatment, exceeds provincial regulatory standards and offers turbidity below drinking water standards. This Memfree solution is remotely monitored by Soneera Water and requires minimal municipal supervision.

A formal evaluation of the treatment system was completed by a third-party engineer, Resource Management International, and the results were provided to the Water Security Agency. The Water Security Agency provided the Town of Unity a Notice of Intent to Alter A Permit to Operate a Sewage Works in September 2018.

The main challenge of this project was proposing a new system that was unproven in Saskatchewan. There was risk in choosing to install a new technology, however that risk was mitigated as a majority of the capital and operating costs had been deferred until the system was proven and operating permit provided.

LESSONS LEARNED

One lesson that was learned was that new infrastructure systems and new technologies can take more time to perfect and to prove than you expect. However, another lesson learned is that by embracing new technology, conducting proper and extensive research, and having the courage and patience to be the 'first', environmental results can be improved, and capital costs can be reduced.