



# Case Study:

## Ontario grower eliminates large septic discharge field with advanced wastewater treatment and UV Pure disinfection



### System design specifications:

- **Application:** Onsite wastewater treatment
- **Location:** Agricultural Southwest Ontario, Canada
- **Commissioned:** February 2017
- **System design/installer:** Waterloo Biofilter
- **System:** 2 x UV Pure Hallett 30
- **Capacity:** 30 gpm (114 L/min)
- **Minimum UV dose:** 30 mJ/cm<sup>2</sup>
- **Minimum UVT:** 50%
- **Regulated E. Coli limit:** < 150 CFU/100 mL



Most agricultural operations rely on onsite septic systems to treat sanitary wastewater—an approach that often renders a large area of land unsuitable for production since it is needed to accommodate a subsurface discharge field.

But a greenhouse operation in Southwestern Ontario has eliminated the need for large discharge fields by installing an easy-to-operate, advanced wastewater system that incorporates Waterloo Biofilter’s SC-40 fully automated biological treatment system with UV Pure disinfection.

The compact, low-energy plant produces high-quality treated effluent that can be safely released to the environment or even reused for irrigation and other non-potable applications. This approach helps maximize the availability of valuable agricultural land for crop production instead of effluent disposal. In this case, a septic discharge field would have required a land area of more than 0.75 acres, or about 3,125 m<sup>2</sup>.

### Chemical-free disinfection reduces maintenance, improves operator safety and protects environment

The Waterloo Biofilter SC-40 plant is equipped to provide a treatment capacity of 25,000 L/day (6,600 gpd) at this site, and handles wastewater which is collected from accommodations for about 80 employees. Two UV Pure Hallett 30 systems provide final disinfection for the treated effluent and ensure that it consistently meets the provincially regulated E. coli limit of 150 cfu/100 mL.

UV Pure technology enables Waterloo Biofilter to offer chemical-free disinfection as well as lower system maintenance requirements, simpler operation, enhanced operator safety and reduced environmental impact of chlorinated/dechlorinated effluent.

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## UV Pure disinfection provides cost savings and operational flexibility for Waterloo Biofilter systems

When disinfection is required, Waterloo Biofilter provides the Hallett UV as a standard component of the SC-40 since the systems provide several benefits over the conventional open-trough UV systems that were previously used.

“The two UV Pure Hallett system in the SC-40 provide better performance in low UVT conditions compared to the larger, open-trough system we previously used,” says Brady Straw Head of Engineering for Waterloo Biofilter. “This offers more operational flexibility and cost savings in the SC-40 process. We can also take advantage of the Hallett’s vertical orientation to significantly reduce space requirements—both in terms of system footprint and clearance for access and servicing.”

*“Since we commissioned the UV Pure Hallett systems several months ago, our operators haven’t had to perform any manual cleanings of the quartz sleeves “*

Several Waterloo Biofilter systems are currently in operation with UV Pure disinfection, providing robust and reliable decentralized wastewater treatment for agricultural, commercial and multi-unit residential applications.

Each UV Pure system is built with Crossfire™ technology, an innovative design with UV lamps mounted vertically in air, rather than inside a quartz sleeve. The design enables UV lamp changes to be done quickly, without draining and disassembling the quartz sleeve and in far less space than conventional systems. Crossfire technology also features elliptical reflectors that reuse light energy to deliver a UV dose 2.4 times greater than conventional systems and to target pathogens from 360 degrees.



## Automated monitoring and cleaning ensure optimal Hallett performance

The Hallett systems, which include 4-20 mA signal outputs, continually transmit performance data to the Waterloo Biofilter control systems, which monitor UV intensity and UV transmittance. UV dose is instantly calculated by the Hallett system and displayed on a built-in LCD screen. If any of the parameters are below the specified limits, the Hallett system relays an alarm to the control system, which notifies the Waterloo Biofilter operations team. The entire SC-40 system and Hallett units can be diagnosed and adjusted remotely to address any performance issues, and if needed, an operator will visit the site.

UV Pure’s automatic self-cleaning system performs very well to control biofouling of the quartz sleeve. Biofouling can be a concern with open-trough systems, but Straw says, “Since we commissioned the UV Pure Hallett systems several months ago, our operators haven’t had to perform any manual cleanings of the quartz sleeves.”



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