

Wastewater Systems Effluent Regulations: OPPORTUNITIES AND CHALLENGES

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“It was the best of times, it was the worst of times...”

As a society, we have come a long way in terms of improving sanitation and public health since the time Charles Dickens penned this opening to *A Tale of Two Cities*. However, as our global population continues to grow rapidly and our collective ecological footprint places an increasing burden on our planet, we face a challenge like none before in our history to protect our environment.

The need for environmental protection is not a new concept, but the current global economy presents challenges in finding the necessary resources to take appropriate action. We Canadians are world leaders in environmental protection and our economy has held up well during the recent economic crisis, but we still need to find the right balance to address our social, economic and environmental responsibilities.

The new Federal *Wastewater Systems Effluent Regulations (WSER)* and their eventual harmonization with British Columbia’s *Municipal Wastewater Regulations* are exciting developments with good intentions, but some of the first questions that will be asked are: “What does it mean for my community?”; “How are we going to find the funding to make this happen?”; and “What are the consequences of non-compliance?”

While we collectively familiarize ourselves with the nuances of the new regulations, we need to pause to consider the implications of moving towards regulatory compliance.

A primer on the federal WSER

The *Wastewater Systems Effluent Regulations* is a federal wastewater regulation under the *Fisheries Act* that came into effect in June 2012. The *WSER* applies to most wastewater treatment systems across Canada that discharge municipal wastewater effluent to water at an average daily volume of 100 m³ or more.

Deleterious substances, and their limits, are identified in the *WSER* as follows:

Carbonaceous BOD:	<25 mg/L, average*
Total Suspended Solids:	<25 mg/L, average
Total Residual Cl ₂ :	<0.02 mg/L, average
Un-ionized NH ₃ :	<1.25 mg N/L @ at 15°C ± 1°C, maximum

**The average values for the CBOD, TSS, and residual chlorine will be based on sampling frequency which is dependent on the flow rate and type of wastewater treatment system.*

The following briefly summarizes the key requirements in the *WSER*, and is not intended to be a substitute for reading the full regulations.

Flow monitoring

The *WSER* requires flow monitoring equipment to be installed on or before January 1, 2013 in all continuous wastewater systems affected by the new regulations. The monitoring equipment must provide a continuous measure of the volume (or flow rate, in certain systems) of influent on a daily basis.

Effluent sampling

Effluent sampling for Carbonaceous Biochemical Oxygen Demand (CBOD), Total Suspended Solids (TSS), un-ionized ammonia, and acute lethality testing



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must be done on a regular basis. Sampling frequency varies according to influent flow rate to the wastewater treatment system and is also dependent on the type of system.

Identification report

For all wastewater treatment plants (WWTPs) existing as of January 1, 2013, an identification report detailing the type of treatment system, location and discharge point must be completed and sent to the authorization officer on or before May 15, 2013. All new WWTPs operating subsequent to January 1, 2013 must submit a report within 45 days of operation of the new WWTP.

Monitoring report

Owners must send a monitoring report to the authorization officer within 45 days after each monitoring period. This report must include information regarding effluent flow rate and concentration of deleterious substances.

Combined sewer overflow report

An annual report on combined sewer overflows must be submitted to the authorization officer by February 15 of each year in order to report on the previous year.

Transitional authorization

The owner of a wastewater system may, on or before June 30, 2014, apply to an authorization officer for a transitional authorization to deposit effluent that contains a deleterious substance, or any combination of those

substances, if the average CBOD or the TSS exceeds 25 mg/L.

The duration of the transitional authorization to deposit effluent will be based on risk rating:

High risk	January 1, 2015 to December 31, 2020
Medium risk	January 1, 2015 to December 31, 2030
Low risk	January 1, 2015 to December 31, 2040

Risk rating for a wastewater system is determined based on a points system defined in *Schedule 2* of the *WSER*.

An application for temporary authorization to deposit un-ionized ammonia is also required for systems that currently discharge un-ionized ammonia.

Regulatory harmonization

When the draft *WSER* document was circulated for public consultation in 2009-2010, the intention was for the federal regulations and the existing provincial regulations to be harmonized, thus standardizing requirements for wastewater disposal across the country. Although the federal regulations are now in effect, this harmonization step has not yet been completed. It is important to understand that *both* regulations are now in effect in British Columbia. Currently, the BC Ministry of Environment enforces provincial regulations and Environment Canada enforces the federal regulations.

Paradigm shift

The new regulations will require changes to our way of thinking about how to plan and design wastewater systems, whether these are new systems or upgrades to existing infrastructure. For many systems, the *WSER* may require significant changes to bring them into compliance. For example, primary treatment of wastewater alone may no longer be sufficient to meet the CBOD and TSS limits. Wastewater systems that use chlorination without dechlorination may find it challenging to meet the stringent residual chlorine requirement. Treatment systems without a nitrification step may struggle to meet the un-ionized ammonia discharge limit.

Funding for wastewater infrastructure is a big question mark, and at the moment, there are no commitments for additional government funding beyond what is currently available to communities. There needs to be a collective effort from all levels of government to initiate dialogue on how to share this cost burden.

Next steps: finding opportunities in compliance

Because British Columbia has well-developed regulations, many wastewater treatment systems in BC fall in the low and medium risk categories defined in the *WSER*. Therefore, there is some time before full compliance with the regulations is mandatory. This presents the opportunity to consider whether upgrades can also incorporate potential cost-recovery mechanisms.

For example, the *WSER* could be used as a trigger to develop options for additional wastewater treatment whereby the higher quality effluent is sold as reclaimed water to local industries, or used to reduce potable water consumption in communities. Wastewater, both in the collection system and at the treatment plant, could potentially be used as a source for energy recovery to provide power to wastewater treatment plants and/or to supplement other energy sources within the community. Removing nutrients from the wastewater effluent and harvesting the nitrogen and phosphorus could produce fertilizer products to be sold. Investing in improved wastewater effluent quality need not always be a financial burden to communities.

To summarize, the implementation of the new federal *Wastewater Systems Effluent Regulations* and its eventual harmonization with British Columbia's *Municipal Wastewater Regulations* is an exciting development with good intentions, but requires a shift in our way of thinking about planning and design of wastewater systems. We may not immediately have all of the answers, but we need to start asking the right questions to adequately plan for the future. Although the new regulations may create significant challenges in the short-term, ultimately, they represent a positive step in environmental protection. They may also act as a catalyst to stimulate growth and innovation that will bring social, environmental and economic benefits to communities. We need to ask critical questions now to plan sufficiently for the future. 💧

Want to learn more?

BCWWA Wastewater Systems
Effluent Regulations Information Seminar

December 6, 2012

Vancouver, BC (Attend in-person or online)

Register now at www.bcwwa.org.

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