



**ROYSTON, BC**

November 26, 2021

*technologies for cleaner water*

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# Project Overview

A school in Royston, BC is looking at options to increase the capacity of their wastewater treatment system while also meeting more stringent effluent limits. Nexom has proposed a BioPorts™ wastewater treatment system comprising:

- Retain existing two (2) 3,000 gal septic tanks
- Implement a BioPorts containerized wastewater treatment system comprising:
  - A two-stage BioPorts Moving Bed Biofilm Reactor (MBBR)
  - A secondary clarifier with hopper bottom
  - A continuous operation infini-D™ drum filter
  - Process control room

Nexom's proposed treatment system has been designed with the following benefits:

- Small footprint and intensified treatment with low civil and land acquisition costs.
- Treatment to the limits with simple to operate and reliable processes.

## Assumptions

- pH shall be within 6.5-8.5.
- Water temperature shall not exceed 35 °C.
- Biocidal or inhibiting compounds shall not be present at concentrations detrimental to biological treatment.
- FOG shall not exceed 120 mg/l.
- Macro- and micro-nutrients shall be present in quantities that are not limiting to biological growth.
- Approximately 5 mg/l bioavailable nitrogen and 1 mg/l bioavailable phosphorus are required per 100 mg/l influent cBOD5.



## System Design Parameters

Design flows and characteristics are presented in the following table:

Parameter	Unit	Design
Flow	m <sup>3</sup> /day	30
Temperature	°C	5-20
TSS	mg/l	55
cBOD5	mg/l	160
TKN	mg/l	40

Design effluent objectives are presented in the following table:

Parameter	Unit	Design
TSS	mg/l	<5
cBOD5	mg/l	<10
NO <sub>x</sub> -N	mg/l	<10



## Treatment Processes

The BioPorts™ Moving Bed Biofilm Reactor (MBBR) is an advanced biological process for efficient and reliable wastewater treatment. Biofilms maintain active treatment biomass in a small footprint. Biofilms are self-maintaining and continuously replace old biomass with new biomass. Therefore, operator worries are eliminated since operator control of sludge wasting is not required to maintain treatment performance.

BioPorts HDPE media cultivates biofilm comprising specialized microorganisms that provide intensified treatment. The media are retained in designated treatment zones by wedge wire screens while peak flows pass through unimpeded.



Aerobic zones require aeration for oxygen supply and mixing. The aeration system comprises an engineered grid of diffusers that has been optimized for energy efficiency and effective mixing while utilizing maintenance-free coarse bubble diffusers. Anoxic and anaerobic zones require mechanical mixers to disperse BioPorts media uniformly throughout the zone(s). The mechanical mixers have been designed for the BioPorts media and maximize dispersion and mass transfer.

Positive displacement blowers are used to provide air supply for the treatment system. Blowers are designed to provide the required airflow at normal system pressure and have the capability of operating at the maximum system pressure intermittently for diffuser purging. The blowers are equipped with sound attenuating enclosures and VFDs.

The infini-D™ Drum Filter utilizes outside-in filtration and stationary disks to minimize mechanical wear elements. Water exits through effluent ports located at the top of each disk. Individual disks can therefore be inspected, isolated, and/or replaced for maintenance without taking the unit offline. The result is high-performance filtration that is simple to operate.



## Scope of Work

### BioPorts™ Treatment System

- Nexom System Process Design including CAD Drawings and Specifications
- Operation and Maintenance Manuals and Project Record Drawings
- Installation Inspection / Start-up / Commissioning of Nexom Supplied Equipment
- Shipping to Site: FCA Royston, BC
- One (1) 40' high cube containerized treatment system
- One (1) two-stage BioPorts™ MBBR
  - One (1) aerobic tank for BOD and TAN oxidation
  - One (1) anoxic tank for NOx-N removal
  - One (1) lot of BioPorts 900-09 media
  - Two (2) 15HP claw blowers for aerobic tank air supply
  - One (1) 1HP vertical mixer for anoxic tank
- One (1) hopper bottom clarifier
- One (1) infini-D™ drum filter, model 30-30
  - SS304 frame and centre tube assemblies
  - Backwash assemblies, including vacuum heads and drive motors
  - One (1) backwash pump
- Local control panel with instrumentation, VFDs, and motor starters

#### **BUDGETARY COST FOR THE SCOPE OF WORK ABOVE:**

**\$800,000.00 CAD plus all taxes / fees**

**All prices are subject to final design review.**

## Items Specifically Not Included:

- Anything not listed in the Scope of Work above
- Material offloading and secure on-site storage of equipment supplied by Nexom
- Assessment of existing infrastructure
- Site preparation and restoration
- Interconnecting process piping and pumping
- Main electrical supply and any electrical work
- Foundation design and supply
- Disinfection



## Questions or Comments?

Any questions or comments can be directed to:



### Nexom

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