

2008 Summerside Pollution Control Annual Report



Figure #1 Aeration tank of Biological Nutrient Removal (BNR) System.

The year 2008 was the first full year of operation for Summerside's newly expanded Water Pollution Control Centre. The sewage treatment was expanded from a Primary Treatment Plant (level 2 facility) to a Tertiary Treatment Plant (level 4 facility). The Primary Treatment Plant only removed the waste that would settle out in the primary settling tanks and used chlorine for disinfecting the wastewater before being released to the bay.



Figure #2 Widescreen of Biological Nutrient Removal System.

The new facility took the treatment process one step further. A Biological Nutrient Removal (BNR) System was added after the primary clarifiers. A BNR is basically a series of tanks containing cultivated bacteria, specifically grown to remove 90-99% of the waste (organic matter, ammonia, nitrates and phosphorus) in the incoming wastewater. The cultivated bacteria are separated from the wastewater by gravity settling

in the last of the series of tanks and are returned to the start of the BNR to start the process again. The last process before the wastewater is released to the bay is disinfection by ultraviolet lights, instead of chlorination. Ultraviolet lights damage the DNA of the pathogenic bacteria, so they can not reproduce.

Our effluent is required to meet certain regulations with the new treatment plant expansion. Our effluent is not allowed to exceed 25 milligrams per litre of total suspended solid material, 25 milligrams per litre of (CBOD) Carbonaceous Biological Oxygen Demand and a fecal coliform count of 200 MPN per 100 millilitre, as a five day average, with a maximum of 400 MPN per 100 millilitres.

The treatment plant exceeded effluent quality expectations! The average total suspended solids were **4.8** milligram per litre. The carbonaceous biological oxygen demand averaged less than **10** milligrams per litre for 2008, while our effluent fecal coliform count averaged **28** MPN per 100 millilitre for the year. By comparison, during 2007, the primary treatment plant's effluent averaged 50.5 milligrams per litre for total suspended solids, 154.5 milligrams per litre carbonaceous biological oxygen demand and an average fecal coliform count of 66,523 MPN per 100 millilitres.



Figure # 2 Summerside Water Pollution Control Biosolids Facility.

The second part of the expansion was a septage receiving station and a biosolids processing/handling facility (N-Viro process). Eventually dumping raw septage directly on land will be phased out and the Summerside facility will be handling all of the septage from the western half of Prince Edward Island.

The biosolids facility treats all of the biosolids from septage receiving and the wastewater treatment process and produces an agricultural fertilizer with the finished stabilized product. The biosolids are first dewatering using Fournier presses, then lime

and cement kiln dust are added to the biosolids to dry it further and increase the pH above 12. Once all of the additives are mixed in, the biosolids are passed through a large furnace to destroy all of the pathogens and dry the product further. The finished pile is allowed to cure for 12 hours before being moved. We have approximately 6 months storage capacity for our finished product. The biosolids plant produced approximately 1000 metric tones of finished product in 2008. Due to an unexpected increased growth rate of the bacteria in the BNR, the staff had to waste excess biosolids from the BNR; above and beyond what was processed through the biosolids facility. It was dewatered through the Fournier presses and sent to IWMC landfill for composting. Approximately 2000 tones of biosolids were sent to the landfill last year. If the biosolids (bacteria) were not removed from the BNR, then the effluent quality would have been severely affected and we would have been out of compliance with the provincial government regulations.