

APPENDIX 24

WASTEWATER REGULATIONS

The discharge of treated water to the marine environment as well as the disposal of biosolids residuals generated during the treatment process are regulated by both the Province of British Columbia and the Government of Canada regulations and guidelines.

The discharge guidelines suggested by the Province will require the equivalent of secondary treatment for CRD's wastewater by 2016 prior to discharge to the marine environment.

As described in PRT 2009 and paraphrased here:

Provincial Regulations

- Provincial Environmental Management Act lists specific requirements for treated effluent under the "Municipal Sewage Regulations" (MSR).
- Effluent discharge to the "open marine" environment requires that secondary treatment (defined as effluent containing no more than 45 mg/L each of cBOD5 and TSS *at any time*) must be provided for all flows up to 2 x ADWF.
- Thus these target values should be interpreted as values that are never to be exceeded, regardless of the type or frequency of sample taken.
- If flows in excess of 2 x ADWF occur more than once every five years, a waste management plan or specific study must be undertaken to determine what treatment level is recommended for such occurrences.
- If the high flow does not occur more frequently than once every five years, then the equivalent of primary treatment is acceptable for that high flow period.
- In the CRD system, flows in excess of 2 x ADWF do occur more frequently than once every five years and therefore a LWMP is required.

Permitted Uses and Standards for Reclaimed Water

- Schedule 2 of the MSR lists "treatment requirements", "effluent quality requirements", and "monitoring requirements" for treated wastewater that is intended to be used as reclaimed water for a variety of end uses, including public access locations (parks, golf courses etc.) and restricted access locations (irrigation of orchards, commercial food crops, silviculture, industrial applications etc.)
- The specific treated effluent constituents listed are pH, cBOD5, TSS, fecal coliform organisms and some general conditions (e.g. set-backs). Any such uses being contemplated by the CRD will have to comply with Schedule 2.

Biosolids Regulations

- Biosolids regulations entitled "Organic Matter Recycling Regulation" have been issued under the Environmental Management Act and the Health Act.
- The regulations provide for two classes of biosolids, Class A and Class B, whose characteristics are summarized in the Table below.
- Class A biosolids are processed to a higher degree than Class B biosolids, thus having a much lower pathogen concentration in the finished product and therefore have much less restrictive handling and land application requirements.
- The Organic Matter Recycling Regulation also specifies requirements for Classes A and B compost as well as the maximum allowable metal concentrations in biosolids, compost and soils following land application.

Table 1: Summary of Biosolids Classifications Requirements in BC's Organic Matter Recycling Regulations
(PRT 2009)

| Characteristic | Class A Biosolids | Class B Biosolids |
|---------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| Pathogen Reduction Requirements | <1,000 MPN per gm (dry solid basis) to be produced by one of the pathogen reduction processes listed below | <2,000,000 MPN per gm (dry solids basis) or one of the pathogen reduction processes listed below |
| Acceptable Processes for Pathogen Reduction | Thermophilic aerobic digestion at $\geq 55^\circ$ for at least 30 min | Aerobic digestion with mean cell retention time between 40 days at 20°C and 60 days at 15°C |
| | Thermophilic anaerobic digestion at $\geq 50^\circ$ for at least 10 days | Anaerobic digestion with a mean cell retention time between 15 days at 35°C and 60 days at 20°C |
| | Exposure to time-temperature processing requirements according to arithmetical formulae given in the regulation depending on the total solids concentration of the biosolids | Air drying for >3 months, during which the ambient temperature must be $>0^\circ\text{C}$ for at least 2 months |
| | Alkaline stabilization by maintaining the pH within the biosolids >12 for 72 hours during which $T > 52^\circ\text{C}$ for 12 hours followed by air drying to $>50^\circ$ total solids concentration | Lime stabilization such that the pH of the biosolids is raised to ≥ 12 after 2 hours of contact |
| Vector Attraction Reduction Requirements | Aerobic or anaerobic digestion resulting in $>38\%$ destruction of volatile solids mass or another acceptable criterion specified in the Regulation | Aerobic or anaerobic digestion resulting in $>38^\circ$ destruction of volatile solids mass or another acceptable criterion specified in the Regulation |

Federal Regulations

The Canadian Council of Ministers of the Environment (CCME) is comprised of the environment ministers of the federal, provincial and territorial governments. On February 17, 2009 the CCME endorsed a Canada-Wide Strategy for the Management of Municipal Wastewater Effluent, known as "the CCME Strategy". The CCME Strategy establishes National Performance Standards to be considered minimum performance requirements for effluent quality from all municipal, community and government wastewater facilities that discharge municipal wastewater effluent to surface water. Standards relevant to CRD are expected to be:

- $\text{cBOD}_5 \leq 25 \text{ mg/L}$ (monthly average of at least five samples per week)
- $\text{TSS} \leq 25 \text{ mg/L}$ (monthly average of at least five samples per week)
- Total residual chlorine $\leq 0.02 \text{ mg/L}$ (testing is required only if chlorine is used as a disinfectant in the treatment facility; testing to be done three times per day if required)

Other Regulations

Several other regulations may evolve during the design horizon of the Program and should be considered in design planning:

- **Microconstituents.** Microconstituents include hundreds of compounds, which encompass endocrine disrupting compounds, pharmaceutically-active compounds and Personal Care Products.
- **Nitrogen and Phosphorus Limits of Treatment.** Limits for these compounds are more likely to be required for discharge to fresh water environments before marine environments.
- **Odour Emissions.** Neither the BC Municipal Sewage Regulation nor the Organic Matter Recycling Regulation include specific requirements for odour control at this time.