

**SAANICH PENINSULA TREATMENT PLANT
WASTEWATER AND MARINE ENVIRONMENT PROGRAM
2009 ANNUAL REPORT**

EXECUTIVE SUMMARY

The Capital Regional District has been operating the Saanich Peninsula treatment plant (SPTP) since February 2000. The treatment plant serves North Saanich, Central Saanich and the Town of Sidney as well as the Victoria International Airport, the Institute of Ocean Sciences and the Tseycum and Pauquachin First Nations communities. It is a secondary level wastewater treatment plant which produces Class A biosolids. The plant has been in operation since 2000. The treatment plant discharges into the marine receiving environment (Bazan Bay) through an outfall located approximately 1,580 metres from the shoreline at a depth of 30 metres.

As part of the Saanich Peninsula Liquid Waste Management Plan (LWMP), the CRD committed to develop a long-term monitoring program. CRD Environmental Sustainability staff reviewed the pre-discharge monitoring data (1999) in conjunction with the post-discharge monitoring results (2000 to 2003) and developed the long-term monitoring program in consultation with the Marine Monitoring Advisory Group. This program has been in place since 2004.

The 2009 Wastewater and Marine Environment Program consisted of the following components:

- daily, weekly and monthly analysis of wastewater for compliance monitoring and treatment plant performance parameters, and quarterly analysis for priority substances
- monthly biosolids monitoring for fecal coliforms, golden nematodes and metals
- monthly surface water monitoring for fecal coliforms and nutrients

WASTEWATER MONITORING

Compliance Monitoring and Treatment Plant Performance

The CRD conducted wastewater monitoring on a regular basis to profile the chemical and physical constituents of influent and effluent. Parameters monitored for compliance with the operational certificate under the Saanich Peninsula LWMP were below the effluent regulatory limits. Influent and effluent quality was within expected ranges and met treatment plant operating objectives.

Priority Substances

In addition to the compliance and treatment plant performance monitoring, over 200 substances were analyzed in the SPTP influent and effluent. More than half of these (e.g., 79%) were below chosen analytical detection limits in 2009. Substances that were detected above analytical detection limits on a regular basis (greater than 50% of the time) in the effluent included most of the conventional variables, metals (both total and dissolved) and two organic substances. Most substances in the effluent were below BC Water Quality Guidelines (BC WQG). For substances (annual average concentrations) that were above BC WQG (i.e., arsenic, cobalt and copper), the predicted levels of these substances in the environment were all below BC WQGs after the estimated minimum initial dilution was factored in.

Data quality objectives (spike failures) were not achieved for approximately 9% of parameters tested in 2009. Improvements in data quality are expected in 2010 due to adjustments in laboratory procedures.

BIOSOLIDS MONITORING

Biosolids were analyzed for fecal coliforms, golden nematode and metals in 2009. All biosolids results were below the BC Ministry of Environment Organic Matter Recycling Regulations (OMRR) Class A limits, indicating they could be applied to land with an approved land application plan.

SURFACE WATER MONITORING

Fecal Coliforms

Similar to previous years, fecal coliform results were low, with annual station geometric means of 1 CFU/100 mL for each station in 2009. There were no elevated fecal coliform concentrations (e.g., above 200 CFU/100 mL) observed at any station or sampling date in 2009.

Overall, results indicate that adverse health effects from recreational primary contact activities and shellfish harvesting are not expected. However, an area of approximately 3.75 km² around the outfall is closed for shellfish harvesting as standard Fisheries and Oceans Canada (DFO) procedure near industrial and sanitary wastewater outfalls. Shellfish closures have a minimum radius around an outfall of 300 m. Closure areas are usually larger near bigger urban centers, such as for the SPTP outfall, where there are other potential sources of bacterial contamination (e.g., stormwater discharges).

Nutrients

There were no distinguishable differences in nutrient concentrations between the station immediately above the outfall terminus and the reference station in 2009. Results were within the ranges measured in previous years and those of the pre- and post-discharge assessment programs. As was observed in previous monitoring years, high variability, both spatially and temporally, was evident in the data. Fluctuations in nutrient concentrations are attributed to natural variation in the study area. Overall, there is no evidence of an effect on nutrient concentrations in the receiving environment from the SPTP discharge.

OVERALL ASSESSMENT

Based on tests used to monitor effluent quality and surface water in 2009, no significant effects from the SPTP discharge on the receiving environment were detected. Results were similar to previous years. Influent and effluent quality was within expected ranges and met operating certificate compliance requirements on all sampling dates. All substances for which there are applicable BC WQG met these guidelines when the estimated minimum initial dilution of the effluent was factored in, indicating that the predicted levels of substances in the environment were not likely at concentrations of concern. All biosolids complied with the appropriate standards in the BC OMRR and could be applied to land with an approved plan. Surface water fecal coliform data indicated that adverse health effects on recreational activities or shellfish consumers are not expected. Finally, surface water nutrient concentrations were within ranges measured in previous monitoring programs and showed no detectable effect from the discharge. The monitoring program will be continued unchanged in 2010.