

Comox Valley Water Pollution Control Centre

The Comox Valley Water Pollution Control Centre (CVWPCC) is a secondary wastewater treatment facility operated by the Regional District of Comox-Strathcona for the communities of Courtenay, Comox and CFB Comox on Vancouver Island. The CVWPCC was first proposed in 1978 as a replacement for aging municipal and military wastewater treatment facilities. From an initial concept of comminution and discharge to a long marine outfall, the design of the CVWPCC rapidly evolved to include primary and secondary treatment with aerated static pile composting of dewatered sludge. *(Photo - primary clarifiers and aeration tank)*



Designed by Associated Engineering (BC) Ltd., the CVWPCC opened in March 1984 with a crew of five. At present, there are seven operators, all of whom hold Class III wastewater operator certificates and Class I or II wastewater collection certificates. Four of the seven operators are graduates of the Malaspina College operator program that ran through the 70's and 80's.

Flow

Five wastewater pumping stations discharge to either a 930 mm diameter 8 km long force main or a 400 mm diameter 2 km force main which join together at the plant headworks and discharge an average daily flow of 14,000 cubic metres of wastewater. Four of the stations feature FLYGT submersible pumps ranging in size from 20 to 75 HP while the fifth has three variable speed 175 HP FLYGT pumps in a dry pit configuration.

Headworks

At the headworks wastewater is screened then degrittied in aerated grit chambers before entering the primary clarifiers. Primary sludge (PS) and grit are withdrawn continuously through degritting cyclones and a grit classifier. Grit is landfilled and degrittied primary sludge is co-thickened with waste activated sludge (WAS) in a pair of gravity thickeners.

Primary effluent passes into two aeration basins that can be operated in either a plug flow or step feed mode. Aeration rates are adjusted by means of in-tank DO probes which feed back to motorized inlet valves on the aeration blowers.

Aeration

Aeration tank mixed liquor flows to a pair of peripheral feed, flat bottomed secondary clarifiers. Settled sludge is returned as return activated sludge (RAS) through a pair of variable speed RAS pumps. WAS is withdrawn downstream of the RAS pumps and co-thickened with primary sludge. Secondary effluent is discharged through a re-aeration cascade to a gravity outfall which terminates in the Strait of Georgia at a distance of 3 km offshore in 80 metres of water. There is no disinfection of final effluent.

Sludge

PS and WAS are thickened in a pair of gravity thickeners and the thickened sludge is stored at 5% solids in a sludge holding tank prior to dewatering on a 2.0 metre belt filter press. Dewatered sludge at 20% solids is transferred in screw conveyors and loaded into a tandem axle dump truck with a watertight sealed box for transport to an offsite interim composting facility. Thickener supernate and belt press filtrate are returned to the headworks for treatment.

Dewatered sludge has been managed in a number of ways since the plant opened. From 1984 to 1991 sludge was composted on-site using the aerated static pile composting method.

Following an odour lawsuit in 1991 composting was moved off-site to a regional landfill and windrow composted using a Cobey compost turner. Inclement weather at the windrow site forced the District to seek additional disposal methods and a pilot land application program is now underway. Research is also underway on the use of compost to close and cap an abandoned wood waste landfill. *(Photo - thickeners and sludge holding tanks with odor control covers and foul air collection piping)*



Effluent

The CVWPCC has consistently met effluent discharge quality targets since commissioning, however, it has been plagued by odour complaints from local residents. A 1991 lawsuit resulted in the District moving the compost operations off-site and the construction of over \$2 million worth of odour control measures. These include a ferrous chloride dosing station to combat H₂S formation in the force mains, tank covers, a foul air collection system, a caustic/hypochlorite wet chemical scrubber and a 40 metre tall discharge stack for treated air. With the commissioning of the scrubber system in April, 1997, it appears that the odour control issue has finally been solved. *(Photo - wet chemical scrubber and exhaust stack)*

Plans for the near future include additional primary and secondary clarifiers, an additional aeration basin and the construction of a dissolved air flotation facility to thicken WAS as a separate stream.

The Comox Valley Water Pollution Control Centre is classified as a Level IV plant.

Thanks to Graeme Faris of the Regional District of Comox Strathcona, for the plant profile and photos.

