

## **Plant Profile: City of Nelson Waste Water Treatment Plant**

The City of Nelson Waste Water Treatment Plant was commissioned in 1972 and is located at Grohman Narrows, 5 Km West of the town. Grohman Narrows is the location where Kootenay Lake becomes Kootenay River. Between 1972 and 2006 this plant provided primary treatment, in 2006 secondary treatment was added. Currently it services a population of 10,500 and is permitted a daily discharge of 10,000m<sup>3</sup> of effluent into the Kootenay River. Five certified EOCP operators are responsible for the operation of both the plant and the City of Nelson drinking water system.

### **History**

The Plant was commissioned in 1972 and provided primary treatment until 2006 when secondary treatment was added. Chlorination of effluent was removed in the 2006 when secondary treatment was added, this was replaced with UV. Dewatering upgrades were made in 2010 when a centrifuge was added, this replaced a belt press. Currently two upgrades are ongoing at the plant these include new methane boilers and a ventilation improvement project. In addition a headworks upgrade project is being defined as well as automatic sludge withdraw. A buffer/surge tank is being investigated, as more intense rain events are becoming more frequent in the Kootenay region. This would allow the operators to better manage storm flows.

### **Plant Process Summary**

The City of Nelson Waste Water Treatment Plant receives influent from a lift station located in town. Influent is pumped 4 km in a 400 mm steel forcemain. This lift station (Air Port Lift Station) is equipped with three 75 hp pumps. Headworks screening is provided by a mechanical barscreen/auger which removes material larger than 15mm. Grit removal is performed through an aerated tank equipped with flights that bring grit to a pump and auger grit washing system. After grit removal, two primary tanks allow for settlement and sludge removal via flights and lobe pumps.

Primary effluent travels over weirs and into equalization tanks. Up to this point the head pressure is provided by the Airport Lift Station. Two 15 hp pumps are then required to bring primary effluent to four large RBC's (4.5m diameter x 8.5m long). Secondary treatment is achieved with these RBC's and plate settlers located downstream. Sludge removal in the secondary tanks is achieved by a vacuum draw off system. UV disinfection provides the final stage of treatment prior to discharging in the Kootenay River.

Solids handling is achieved through two anaerobic digester tanks. These two tanks are run in series as a two stage process. The first digester acts to mix the sludge and allows for digestion while the second tank allows sludge to settle for final processing. This final processing is performed by a Perialisi centrifuge. The recently completed methane boiler project allows for the use of nearly all methane produced in the primary digester to heat the sludge as well as the inside working areas of the plant.

Photo of Centrifuge room



Photo of new methane boilers

