

Awards

Award of Excellence 2011

Municipal Engineering Category

Consulting Engineers
of British Columbia

District of Kent
Duncan-Bateson Pump Station

Award of Merit 2011

Municipal Engineering Category

Consulting Engineers
of British Columbia

Abbotsford Mission Water &
Sewer Services
Dickson Lake Upgrades

Award of Excellence 2009

Municipal Engineering Category

Association of Professional
Engineers & Geoscientists of
British Columbia

Award of Excellence 2009

Municipal Engineering Category

Consulting Engineers
of Canada

District of West Vancouver
Eagle Lake Membrane
Water Treatment Facility

Award of Excellence 2009

Municipal Engineering Category

Consulting Engineers
of British Columbia

Gold Award 2009
Water & Wastewater Category
American Council of Engineering
Companies of Washington

Honor Award
Local Civil Engineering
Achievement 2009

American Society of
Civil Engineers

King County, Washington State
Design/Build of the
Brightwater Marine Outfall



Office - North Vancouver

Opus DaytonKnight was incorporated in British Columbia in 1965. The company is largely made up of technicians and professional engineers. Management rests with senior engineers who are active in the day-to-day activities of the organization.

Fields of specialization include sewage collection, treatment, disposal, and reclaimed water reuse; water supply, treatment, and distribution; stormwater management; solid waste management; SCADA systems; emergency response planning, trenchless technology; and asset management.

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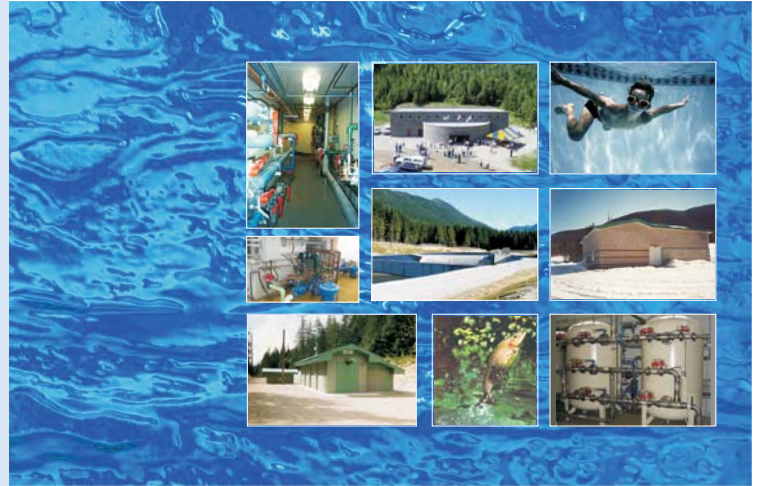
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*As of 15 April 2010 Dayton & Knight Ltd. became Opus DaytonKnight Consultants Ltd.

Water Treatment



OPUS DAYTONKNIGHT



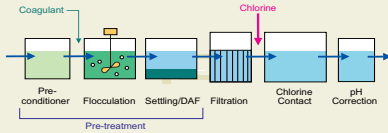
Regulations

The quality of British Columbia's drinking water is regulated by the Drinking Water Protection Act and Regulation. The regulatory authority for drinking water quality in B.C. rests with the Ministry of Health. The legislation is implemented through the regional Drinking Water Officers.

Alberta Environment is responsible for the establishment of standards and guidelines for municipal waterworks in Alberta. The regulatory authority for drinking water quality rests with the Regional Health Authorities. In the Yukon, water treatment goals should meet, as a minimum, the Guidelines for Canadian Drinking Water Quality (GCDWQ). The INAC guidelines for First Nations communities also require that drinking water meets the latest edition of the GCDWQ.

Solutions: Achieving Treatment Objectives

- **Coagulation** add coagulant to attract small particles together
- **Flocculation** particles "grow" to form larger particles in flocculation tank
- **Sedimentation** settle out particles in settlers
- **DAF** float particles
- **Filtration** remove remaining particles
- **Disinfection** remove viruses and bacteria



District of Port Edward Water Treatment Plant



The plant addresses issues of corrosiveness, acidity, impurities and high colour in the Wolf Creek water. The plant includes pH adjustment; primary flocculation; a modern DAF (dissolved air flotation) system to remove colour and other impurities; multi-media filtration; primary disinfection using UV and secondary disinfection using sodium hypochlorite. The plant capacity is 2,400 m³/day, expandable to 3,600 m³/day.



District of New Hazelton Water Treatment Plant

The new water supply and treatment system consists of a new intake on Station Creek, a 200mm diameter watermain, a 2000 m³/day water treatment plant with slow sand filtration followed by disinfection with sodium hypochlorite and a clearwell. The project also included a new 1,600m³ bolted steel storage reservoir.



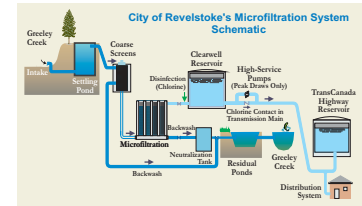
City of Revelstoke Greeley Creek Water Treatment Plant



In August 1995, a waterborne disease outbreak (Giardia, Cryptosporidium and several strains of bacteria) affected hundreds of people in Revelstoke. After detailed development of water source and treatment options followed

by a comprehensive public consultation process, the City decided in 1998 to construct a water treatment plant using leading-edge microfiltration membrane and chlorine disinfection. The plant has a capacity of 16.7 ML/day.

- Surface and Groundwater Treatment
- Water Quality Monitoring
- Treatability Studies
- Process Development
- Pilot Scale Studies
- Pre-treatment
- Filtration and Membrane Technologies
- Disinfection (UV, chemical)
- Sludge Treatment and Disposal
- Plant Commissioning and Start-up



Abbotsford/Mission - Norrish Creek Water Treatment Plant



Phase 2 Membrane Filtration

The plant has an initial capacity of 27 ML/day with allowance for future expansion up to 108 ML/day.

Water quality issues include seasonal turbidity and colour, and the risk of giardiasis.

The innovative combination of processes designed to meet the seasonal water quality has resulted in a very economical treatment system (± \$0.70/installed gallon).



Phase 1 - Slow Sand Filtration

This consists of four open filters totaling 2.5 acres in area with a capacity of 91 ML/day. The system also includes chlorine disinfection and a 500,000 gallon clearwell for storage of treated water.

Kispiox Band Water Treatment Plant



Water with high levels of manganese and hardness is supplied to the community from two wells. The plant capacity is 1,300 m³/day.

BIRM is used for manganese removal. Hardness is reduced through ion exchange softening with sodium chloride. The system allows for blending of the softened water and filtered water from the BIRM tanks to maintain sodium concentration in the distribution system within acceptable levels. Disinfection is provided with sodium hypochlorite.