



Kelowna UV Water Treatment Facilities

The City of Kelowna's new ultraviolet (UV) water treatment facilities at its Poplar Point, Eldorado, and Swick Road intakes on Okanagan Lake, are providing improved drinking water to customers in north, central and south Kelowna. The \$8 million project involved retrofitting UV treatment into existing intake pump stations and chlorination facilities while maintaining operation of the facilities to ensure continued water supply to the City. With the addition of UV reactors, the City's water utility is now providing its customers with a two-stage disinfection system consisting of UV primary disinfection followed by chlorination.



The City's water utility supplies water to more than 50,000 residents and 1,700 industrial, commercial, and institutional properties. The water system is classified by the EOCP as a Level IV Water Distribution System. The raw water source is Okanagan Lake, with four intake locations. Previously water treatment has been limited to chlorine disinfection. However, in recent years concerns over water quality and protozoa such as giardia and cryptosporidia have led the City to seek enhancements to the primary disinfection at all intake locations.

The largest and most challenging of the three facilities was the Poplar Point site, which is the City's primary water supply and treatment facility. The Poplar Point site consisted of two high lift pump stations and a chlorination building located on a confined site immediately adjacent to Okanagan Lake.



The scope of the new project included providing increase intake capacity and increasing the overall facility's design capacity to 180 million litres per day. The challenge was to find a way to integrate the UV treatment facilities into this extremely constrained site while improving suction side hydraulics to the high lift pumping system and providing an opportunity for the City to add future filtration. The solution involved transferring existing high lift pumps from the oldest high lift pump station was used to accommodate a new intake connection, low lift pumps, and UV equipment. A new interconnection structure was installed to tie the new facilities to the existing intake pipe on the suction side of the high lift pump station.

The project was scheduled to allow the components impacting water delivery capacity to be constructed during the low demand winter months, thereby ensuring that the City could maintain full water supply throughout the construction period.



Construction began in January 2005. The transfer of pumping equipment, demolition of the existing pump station, and excavation and construction of the substructure for the new UV Disinfection Facility were completed in the winter 2005. The 1600 mm diameter intake was floated and sunk to a depth of 30 metres in May 2005. Construction of the new superstructure and installation of the low lift pumps and UV equipment and associated electrical and mechanical work was completed by year end 2005. The City completed the programming and controls integration to allow the new facilities to be commissioned in a staged manner at the three sites in early 2006.

- Thanks to the City of Kelowna and Associated Engineering including Lianna Mah and Bill Harvey, P.Eng., Project Manager.