

City of Guelph FM Woods Sodium Hypochlorite System Upgrade

In 2015, City of Guelph Water Services identified the need for a replacement sodium hypochlorite system at the FM Woods Water Treatment Plant. The FM Woods WTP constitutes the largest supply of water to the City and as such its operational reliability is extremely important. The existing sodium hypochlorite dosing system, installed in 2005, consisted of PVC piping complete with glued joints and was prone to leaks. In addition the existing diaphragm metering pumps are prone to solids buildup and required frequent maintenance.

To avoid leaking, C3 Water evaluated glued joints and completed a preliminary design of two tubing systems. A PFA tubing based system, complete with compression style fittings was recommended based on a cost-benefit analysis of the two tubing options. Design work was closely coordinated with City of Guelph project management staff in order to address maintenance and operational concerns the City had with the existing system. Operator familiarity with equipment was an important factor when deciding on specified equipment. Other equipment was selected based on superior chemical resistance and proven longevity.

Design activities included the following:

- Selection of peristaltic metering pumps used previously by City operators which were capable of providing chlorine dosing rates suitable for a range of historic flows observed at the plant.
- Design of a four pump dosing system (two skids with two pumps each) which will operate in a two duty, two standby arrangement complete with PFA tubing and associated fittings, isolation ball valves, back pressure sustaining valves and relief valves, pressure gauges and isolators. Existing vent and suction piping was reused as part of the design, while new discharge piping from the dosing pumps to the chemical addition point was included for in the design. The design included development of detailed panel layout drawings, suggested bill of materials for on-panel, off-panel, and transition parts, as well as detailed technical specifications.
- Development of a detailed transition plan to be used by the contractor for transitioning to the upgraded system while maintaining plant operation during construction and commissioning of the upgraded system. Construction and implementation of the upgraded sodium hypochlorite system has commenced.
- Update of system P&IDs, I/O list, and control narrative to be used by programmers for implementation of the system.

C3W provided tender period assistance to the City and ongoing technical guidance throughout construction and implementation of the upgraded sodium hypochlorite system.

