

The Middleton Water Supply System Upgrade

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ABSTRACT

The Middleton Water Supply System in the Region of Waterloo (Region) currently supplies about 40% of the water demand in the City of Cambridge. The existing system consists of six (6) wells, a reservoir, and a booster pumping station.

The Region retained R.V. Anderson Associates Limited (RVA) to provide consulting engineering services for capital project titled “The Middleton Water Supply System Upgrade”. The objective of the upgrade was to improve the quality of the drinking water, while maintaining the existing drinking water production rate. The water quality issues being addressed are: the occasional detection of coliforms in the raw water and the presence of Trichloroethylene (TCE) caused by migration of industrial chemicals already in the aquifer.

The Region selected an Advanced Oxidation Process (AOP) that utilizes hydrogen peroxide and ultraviolet irradiation (UV) was selected for the treatment. UV will provide additional disinfection and hydrogen peroxide plus UV will provide a target TCE reduction of 75%.

As part of the upgrades, RVA designed a new 900 m² building which will house the new AOP system as well as various upgrades to the well houses, yard piping, reservoir, and booster station.

One of the distinctive challenges is that the project is pursuing LEED certification for the new AOP building which required a unique building design.

The project is currently under construction and substantial performance is scheduled for 2011.