

Patuxent Water Filtration Plant Expansion

HIGHLIGHTS

Design of new UV disinfection facilities for 120 mgd filtration plant.

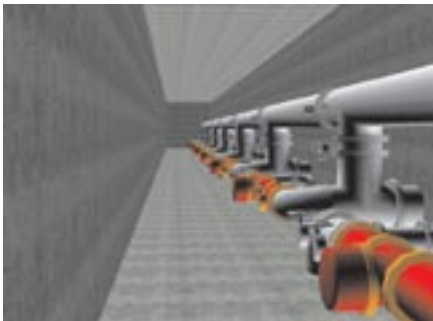
Use of computational fluid dynamic modeling to evaluate UV reactor performance.

First large-scale UV disinfection system for drinking water in the State of Maryland.

The Washington Suburban Sanitary Commission (WSSC) selected Carollo (teamed with another consultant) to design a new UV disinfection system for the 120-mgd Patuxent Water Filtration Plant expansion project. The Patuxent facility is a conventional filtration plant currently using chlorine disinfection. Incorporating UV disinfection into the process scheme will enhance the plant's multi-barrier approach for pathogen control. The Patuxent facility will employ the first large-scale UV disinfection system for drinking water in the State of Maryland. WSSC chose the Carollo team based on extensive expertise in UV disinfection, including:

- ▶ Carollo's authorship and in-depth understanding of the USEPA's *UV Disinfection Guidance Manual*, which will help expedite regulatory approval of the UV design.
- ▶ Carollo's experience validating UV reactors at the Portland UV validation facility, which will help ensure optimized reactor designs and reduced life-cycle costs.
- ▶ Carollo's computational fluid dynamic-based models for UV reactor performance, which will reduce the uncertainty associated with UV reactor performance before procurement.

The project includes preliminary and final design services to increase the emergency capacity of the plant from 80 to 120 mgd. The expansion will include an additional conventional filtration train, UV disinfection facilities, and expanded chemical addition systems.



Carollo will use computational fluid dynamics to identify the optimal approach for installing UV within the tight space constraints of the Patuxent filter gallery. CFD is a powerful tool for assessing the impact of pipe bends, expansions, and valves on UV reactor performance.

